THE IRON AGE

A Review of the Hardware, Iron, Machinery a... al Trades.

Published every Thursday Morning by David Williams Co., 232-238 William St., New York.

Vol. 76: No. 1. *New York, Thursday, July 6, 1905.* $5.00 a Year, including Postage Single Copies, 15 Cents.

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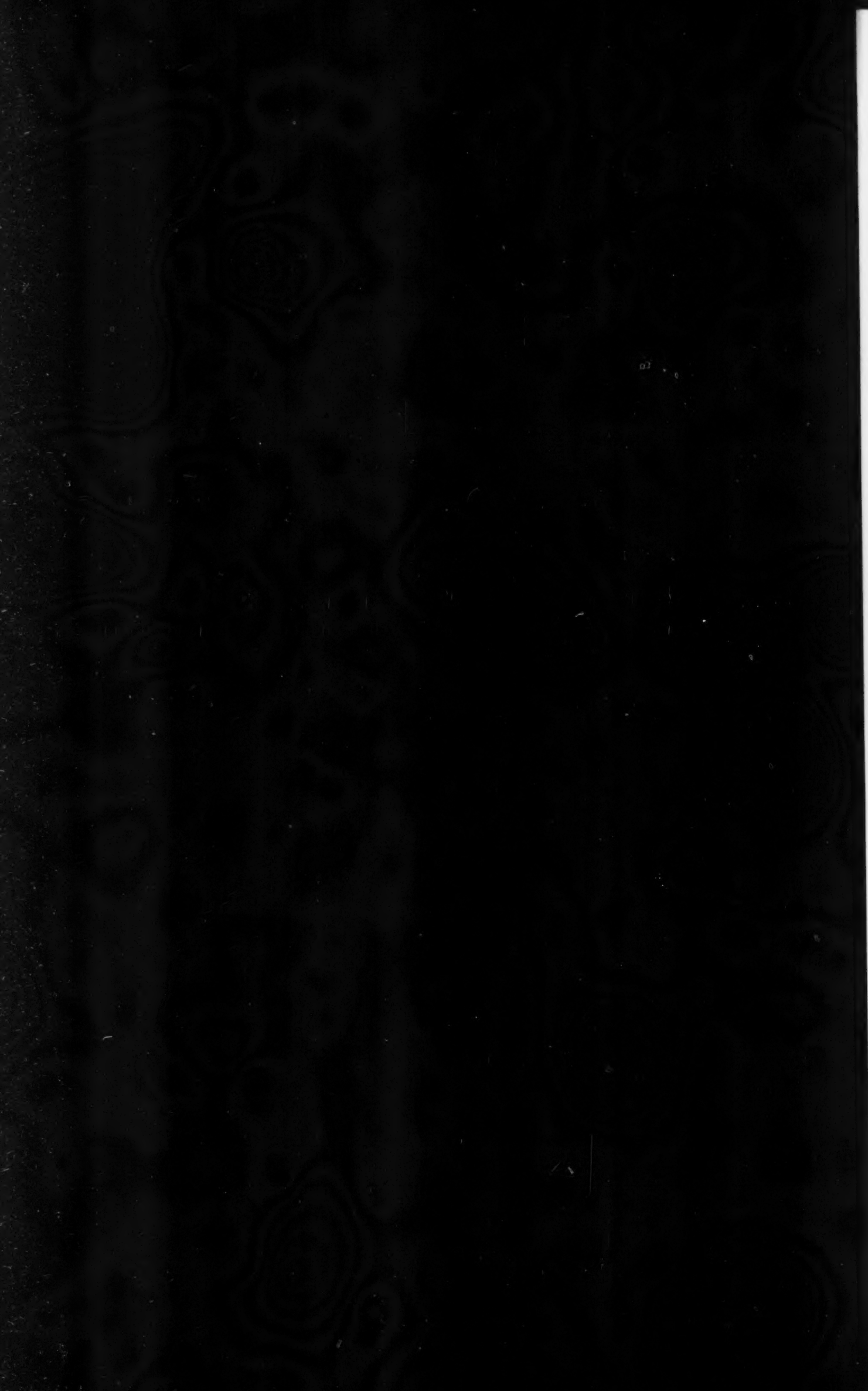


THE IRON AGE

New York, Thursday, July 6, 1905.

The Draper 18-Inch Geared Head Lathe.

The economical use of machine tools requires that they be run always at the maximum allowable cutting speed. Before the introduction of high speed steel the variation in proper speeds for different diameters of work was less noticeable and four or five step cone pulleys with back gears gave a range that was ample. With high speed steel it has been found possible to increase all former speeds and desirable to extend the range, a fact which has been recognized and acted upon by most builders, particularly of lathes, milling machines and drills. Other reasons why the old cone pulley and belt system of changing speeds is being abandoned are that a belt is usually incapable of pulling heavy cuts at slow speeds and cannot be shifted easily and quickly enough to encourage the workman's changing speeds as frequently as he should.

In a heavy engine lathe, where power is required for rapid reduction or fast cutting speeds in finishing, some form of geared head is coming to be regarded as essential. The accompanying illustrations show an 18-inch lathe, built by the Draper Machine Tool Company, Worcester, Mass., which is equipped with an interesting patent geared head, driven through a single wide face pulley by a 6-inch belt. One advantage of this lathe is that a motor drive may be easily applied without making any radical changes in the construction, and as the geared head provides several mechanical speed changes it is not necessary to use a variable speed motor. One of constant speed form, wound for either direct or alternating current, may be used.

The lathe has ten possible spindle speeds obtained by sliding gears operated by levers, as shown in detail in the illustrations. Fig. 1 shows part of the lathe with the tail stock and carriage placed in close proximity to the head stock. A detail of the geared head is shown in Fig. 2, this being a view looking down on the mechanism when the cover of the case is removed. Fig. 3 shows three views of the geared head, indicating clearly the construction and the manner of its use.

Referring to Fig. 3, R is the driving shaft at the back of the lathe and carries two sliding gears, A and B, manipulated by the middle lever at the front of the head. Gears A and B may be alternately engaged with gears C and D on the sleeve E, which runs loose on the main spindle T. The shaft S, with its four gears, J, K, L and M, takes the place of the usual back gear shaft in an ordinary lathe, and may be thrown out of action by turning the eccentric handle F. The quill on which the gears C and D are mounted may be clutched to the spindle by the knob shown in Fig. 2. With this setting of the mechanism and the shaft R running at constant speed two spindle speeds are possible, the faster one with the gears A and C engaged and a slower one with gears B and D in mesh. By disconnecting the spindle gears C and D from the spindle and throwing the back gear shaft S into action eight additional spindle speeds are obtainable through the gears H, I, N and O on the spindle and the gears J, K, L and M on the back gear shaft.

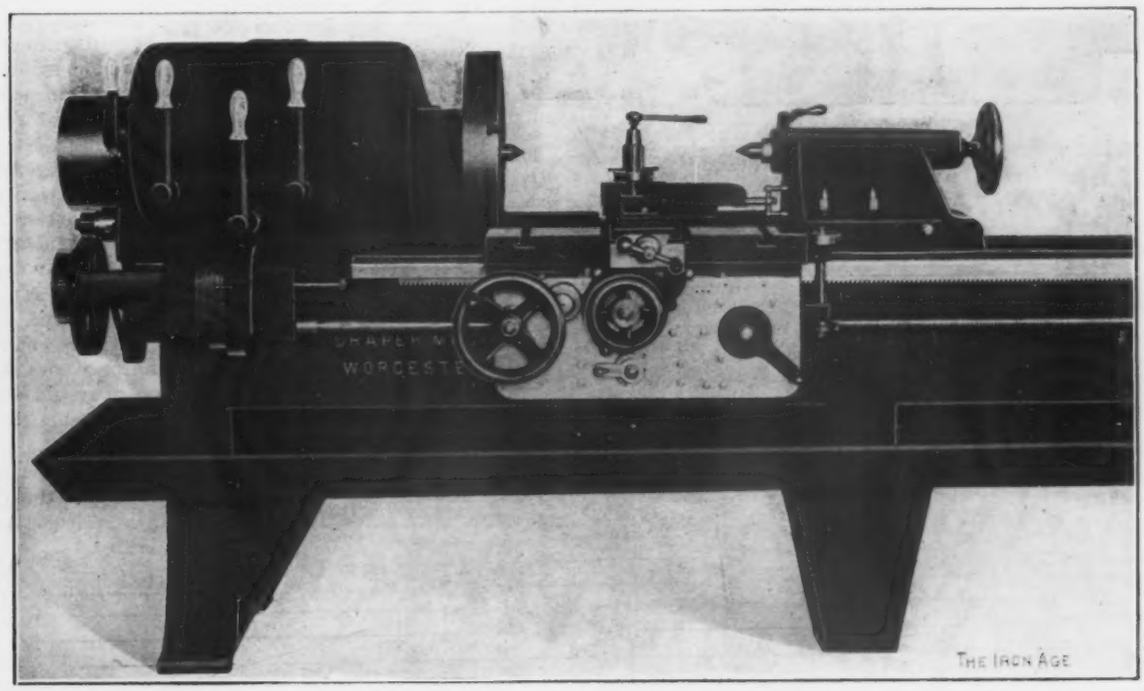


Fig. 1.—An 18-Inch Lathe with Patent Geared Head, Manufactured by the Draper Machine Tool Company, Worcester, Mass.

With gears A and C engaged either the gears I and K or H and J may be engaged. Gears C, B, H and I being connected together and loosely mounted on the spindle, the shaft S may be driven at two different speeds, one with H and J in mesh and the other with I and K engaged. By manipulating the handle at the left in front of the box the drive from the back gear shaft to the spindle may be transmitted either through L and N or M and O. Thus there are four speeds through the back gear shaft with A and C in mesh and similarly four with B and D in mesh. The gears N and O are of course fixed to the spindle. The pan shape of the lower half of the gear casing provides a reservoir in which the gears run immersed in oil.

The belt driven machine is usually furnished with a two-speed countershaft, so that 20 working speeds are afforded. It is never necessary to run the lathe in the reverse direction, even for thread cutting. For this a dial thread indicator, shown at the right of the carriage in Fig. 1, is provided, which permits odd, even or fractional threads to be caught with a half nut after returning the carriage by hand when chasing the threads.

When the lathe is to be motor driven a cover with projecting pads for the mounting of the motor is substituted for the plain cover, and a train of gears or chain drive connects the armature shaft to the driving shaft at the back of the lathe on which the pulley is ordinarily mounted.

Three changes of feed may be had with this lathe without changing gears. It is also made, however, with the Draper quick change feed in the apron, which gives 40 changes of feeds or screw pitches without changing gears. The patent geared head is furnished for lathes of all sizes from 18 to 42 inch swing.

Fig. 2.—The Draper Geared Head with Cover Removed.

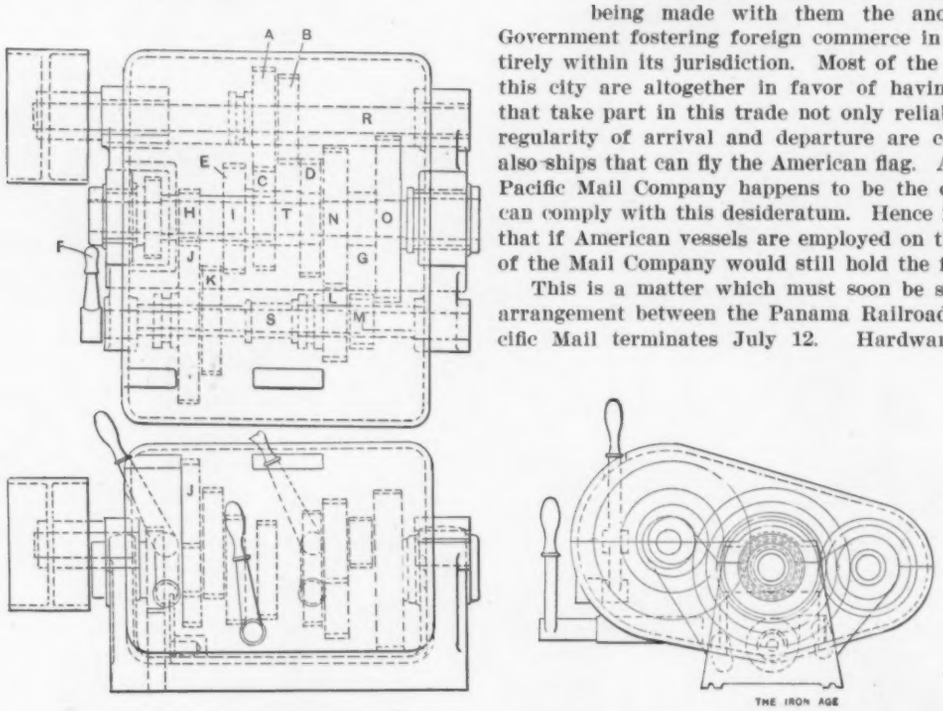


Fig. 3.—Plan and Side and End Elevations of the Geared Head of the New Draper Lathe.

The third of four great steel steamships being built for the Pittsburgh Steamship Company, a wing of the United States Steel Corporation, was launched at the South Chicago yards of the American Shipbuilding Company June 24. This ship, which is to be the flagship of the fleet, is named the William E. Corey, after the president of the United States Steel Corporation. The sister ships are the Elbert H. Gary, launched at Chicago three months ago; the G. W. Perkins, launched at West Superior, Wis., June 26, and the Henry C. Frick, which will be launched at the Bay City yards of the American Shipbuilding Company in about 30 days. These four boats are the largest vessels on the lakes, being 569 feet over all, 549 feet keel, 56 feet beam, 31 feet depth. They embody a number of new principles in marine engineering, straight lines being substituted for arches for greater carrying capacity.

A Pacific Coast Shipping Problem.

SAN FRANCISCO, CAL., June 24, 1905.—The important question now before the commercial public, especially the portion of it that imports goods from the East, is what arrangement, if any, will be made with the Pacific Mail Steamship Company for carrying goods from Panama to San Francisco and back again. As the other end of the route and the Panama Railroad are in the possession of the United States Government the old order has passed entirely away, but the same necessity exists of making arrangements to ship goods on a through bill of lading from New York to San Francisco. One bill of lading cannot be given at New York and another at Panama. Necessarily the United States Government must give that through bill of lading, and it must either make arrangements with some responsible company such as the Pacific Mail undoubtedly is or put on steamers of its own between Panama and San Francisco. Of course this the Government cannot and will not do. Then, as the only two steam lines that are at present in the field happen to be foreign corporations, one British and the other German, there would be in the event of an arrangement being made with them the anomaly of the Government fostering foreign commerce in a matter entirely within its jurisdiction. Most of the merchants of this city are altogether in favor of having the vessels that take part in this trade not only reliable as far as regularity of arrival and departure are concerned, but also ships that can fly the American flag. At present the Pacific Mail Company happens to be the only one that can comply with this desideratum. Hence it would seem that if American vessels are employed on this side those of the Mail Company would still hold the field.

This is a matter which must soon be settled, as the arrangement between the Panama Railroad and the Pacific Mail terminates July 12. Hardware, iron, steel pipe and other goods of the same character form the larger part of the goods that come from New York via Panama for San Francisco and the other coast cities; consequently our hardware merchants are more interested in this than anybody else, as far as mere dollars and cents are concerned.

The arrival here of the new steamship Dakota has been a matter of great interest. Her cargo consisted of 8760 tons of steel, of which 7000 go to Seattle, the rest being for San Francisco. She is one of the giant steamships of the Great Northern Steamship Company and has been visited by crowds of citizens.

This is the dull season, as it is called, and no doubt business is quiet as compared with other portions of the

year, but if so the Clearing House exchanges do not show it. The clearings have improved exceedingly over last year, indicating larger sales, the largest on the whole that San Francisco has ever seen. Notwithstanding this there are pessimists even among our bankers, from whom the big clearings come, some of whom predict short crops. Everything, however, is going along at high pressure. Capital keeps pouring into the city, our banks have increased their resources and our merchants are increasing their facilities for doing business. Some have doubled the space they formerly occupied. It is the same with our manufacturing institutions, one of which is about to double its capital and will require a lot of new machinery. Outside of mining machinery and a few other odds and ends the Pacific Coast does very little to supply institutions of this kind, which necessarily have to obtain their equipment from the East.

J. O. L.

Test of a Steam Turbine After Two Years' Service.

The following test is of interest, as there has been little information available concerning the deterioration of steam turbines and its effect on their performance. The test was made by Professors Edward F. Miller and R. R. Lawrence of the Massachusetts Institute of Technology. The machine was a 150 horse-power turbine made by the De Laval Steam Turbine Company, Trenton, N. J., and had been in service continuously for the past two years at the New England Structural Company, East Everett, Mass., for furnishing power and light. Shortly before the test was made the turbine was taken apart and thoroughly examined. It was found that there was no appreciable wear on the pinion or buckets, and many of the latter still had part of the original scale formed when they were drop forged.

The machines were furnished under a guarantee not to consume over 18.7 pounds of steam per brake horsepower per hour at full load, or 19.7 pounds at half load, when supplied with steam at 150 pounds pressure and exhausting into a vacuum of 26 inches. Comparing these figures with those obtained in the test it will be seen that the turbines are well within their original guarantees, indicating that the deterioration, if any, has apparently not affected the steam consumption. Following are items selected from the test:

Duration of test	9 hours.
Steam pressure at turbine	145.9 pounds
Number of nozzles in use	6
Quality of steam	98.95 per cent.
Barometer	29.90 inches.
Vacuum	25.47 inches.
Average total kilowatts	105.1
Average total electrical horse-power	142.2
Average total brake horse-power	160.4
Average number of revolutions per minute	1,200
Average steam per hour	2,826.0 pounds.
Steam per kilowatt hour	26.49 pounds.
Steam per electrical horse-power hour	20.05 pounds.
Steam per brake horse-power hour	17.62 pounds.

From the account of the test submitted by the engineers it is evident that all proper precautions were taken, and the methods employed were consistent with the obtaining of accurate results.

Cost of High Speed and Self Hardening Steels.

Among the topical discussions at the recent annual convention of the American Railway Master Mechanics' Association at Manhattan Beach was one on high speed steels. The comparative economy of high speed and self hardening steels was discussed as follows by J. A. Carney of the Chicago, Burlington & Quincy Railroad:

The almost prohibitive cost of high speed steel makes one consider carefully whether or not it should be purchased for all classes of work, and especially for old machines which cannot tax the capacity of the cheaper self hardening steels. When one figures that a tire lathe tool costs from $8 to $10, it looks like a lot of money. On the other hand, if we will take into consideration the slower speed, smaller output, time lost sharpening and dressing tools and the loss of material incident to dressing and sharpening, it will be seen that the cheaper tempering and self hardening steels are too expensive to be considered. A case in question: A set of bolt cutter dies made of 10-cent tempering steel cost 21 cents for labor and 5 cents for material, total 26 cents, and cut 100 bolts before dressing. A set of similar cutters made of 75-cent high speed steel cost 37½ cents for material and 40 cents for labor, total cost 77½ cents, and cut 1100 bolts before dressing. Enough tempering steel cutters to do the same work would have cost $2.86. This is what I mean when it is said we cannot afford to use low capacity steel.

The use of tool holders and smaller sizes of steel will effect great economies in the investment of high speed steel, and in one instance the introduction of tool holders reduced the number of pounds of steel required for a wheel lathe over 80 per cent., and instead of a tool 1 x 2 inches, 18 inches long, costing $7.87, a 1 x 1 x 8 inch tool, costing $1.87, is used, and the tool holder does not wear out or break and costs 5 cents per pound, against 75 cents per pound for high speed steel. Rose bit reamers can be tipped with high speed steel and increase their efficiency from 750 to 1000 per cent.; in fact, a little ingenuity and thought will open up economies in the quantity of high speed steel that were never given a thought when 10-cent steel was used. Larger section tools of high speed steel which have become too short can be hammered out into tools of smaller section with excellent results.

High speed steel has come to stay until some more efficient material is discovered, and while its price may make us question its economy, a second thought will convince us that we cannot afford to go back to the cheaper tool steels for heavy work, however good these may be in their class.

The United States Cast Iron Pipe & Foundry Company.

The balance sheet of the United States Cast Iron Pipe & Foundry Company, as of May 31, 1905, given out last week, is as follows:

Assets.

Cost of properties and plants	$24,085,109.95
Treasury stock at cost	347,555.00
Bonds of American Pipe & Foundry Company owned by us, and sinking fund for the redemption of those outstanding	501,567.00
Cash	444,158.98
Accounts, bills receivable, &c.	3,129,709.51
Raw and manufactured material	2,052,163.52
Total	$30,560,263.96

Liabilities.

Preferred stock issued	$12,500,000.00
Common stock issued	12,500,000.00
Bonds of American Pipe & Foundry Company	1,500,000.00
Accounts payable	1,174,821.54
Reserve for improvements in lieu of depreciation (unexpended)	95,689.04
Reserve for working capital	2,297,438.60
Profit and loss	492,314.78
Total	$30,560,263.96

As compared with the previous year this statement shows the following increases: Bonds owned, $78,220; accounts and bills receivable, $890,233; materials on hand, $402,811; accounts payable, $613,958; working capital, $732,170. The decreases are as follows: Cost of properties and plants, $4150; cash, $268,755; reserve for improvements, $7913; profit and loss, $239,856.

At the annual meeting held at Burlington, N. J., June 28, L. R. Lemoine was elected a director, succeeding A. C. Callahan, who retired some time ago. Other directors were re-elected. The officers are: President, George B. Hayes; vice-president, George J. Long; secretary and treasurer, B. F. Haughton.

The Treasury Department announces that the deficit for the fiscal year ended June 30 was $23,987,752. The expenditures of the Government were $567,411,611 and the receipts were $543,423,859. The deficit for the preceding fiscal year was $41,053,422.

A New Ridgway Horizontal Boring Machine.

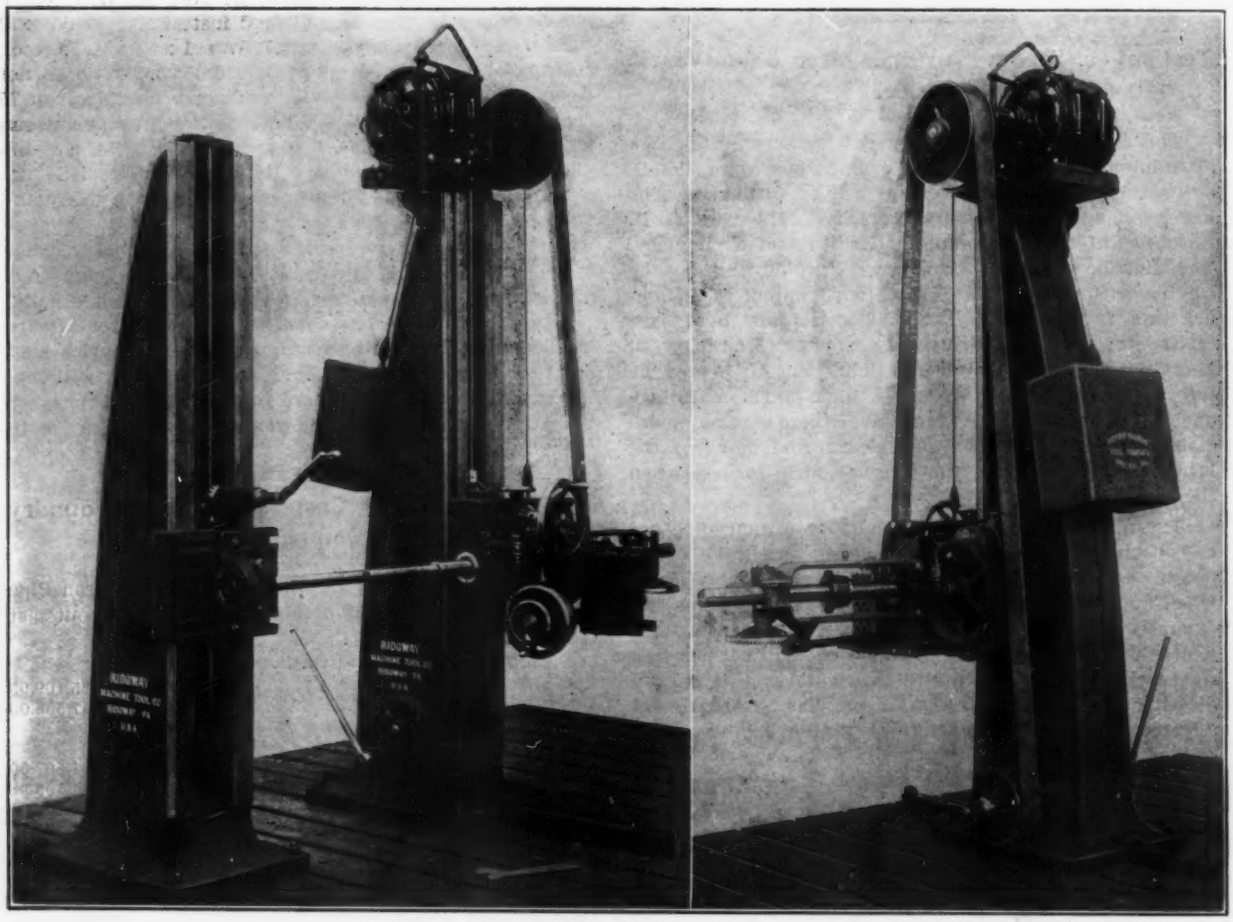
In the last issue there was given a description of a new 8-foot radial drill made by the Ridgway Machine Tool Company, Ridgway, Pa. Another tool made by the same company, a horizontal drilling, boring and tapping machine, is illustrated herewith. The views of two opposite quarters of the machine are shown in the halftone, the outboard support being omitted in the right-hand view.

The column which supports the head with its spindle and operating mechanism is of large box section and carries at the top a pad on which the driving motor is mounted. A peculiar feature of the machine is the support of the drill spindle, which is somewhat similar to that provided in the radial drill referred to above. The spindle is of high carbon steel accurately ground to size and works in a long sleeve, which is journaled in bronze lined bearings in the head. The object of this mounting, as in the other tool, is to relieve the drill spindle of strain due to the belt pull. The feed mechanism comprises a draw key and slip gears for varying the feed and throwing it out or in. The feeding is communicated to the spindle by a spur pinion which meshes in a rack behind the spindle.

For raising or lowering the head on the column there is a stationary screw between the guides, upon which a rotating nut travels. The latter can be operated by hand to adjust the head for setting or by power to make a quick change over considerable distance. A simple clutch, which may be operated while the machine is running, makes the change from hand to power manipulation instantaneously. A weight behind the column counterbalances the head.

A lateral movement of the column on the floor plate is obtained through a rack and pinion, which may also be operated by either hand or power, a simple clutch, as in the case of the head traverse, accomplishing the change. The lever for the hand manipulation may be seen in both views and is convenient for fine adjustments. Through the power traverse the machine may be quickly run back clear of the work to allow for examination or changing boring bars or cutter heads. A stop on the base plate makes it possible to bring the tool back to the exact position previously occupied. The rack upon which the traverse is effected as well as the entire machine may be moved and set up in other locations on the base plate, both being secured by clamps in slots in the plate.

The motor is one of variable speed type, having a range of 6 to 1, and provides power for rotating the spindle and all of the movements of the head and machine. A belt is used for the drive, being passed successively over the main driving pulley at the top of the column, which is geared to the motor, the spindle driving pulley, the head traversing and feeding pulley and a pulley at the base of the column, which ordinarily runs as an idler, but becomes active in the power traversing of the column. It will be noticed that the arrangement is such that the belt length is constant regardless of the position the head may occupy on the column. The motor is reversible for tapping operations and is controlled in speed and direction of rotation by a small controller mounted upon the head, where it is always conveniently reached.



A New Horizontal Drilling, Boring and Tapping Machine, Built by the Ridgway Machine Tool Company, Ridgway, Pa.

By means of the boring bar support shown only in the left-hand view, the range of work which the machine is capable of is greatly increased. This part consists of a column similar to that carrying the drill head and supports an adjustable saddle, which is arranged to receive bushings of various sizes, depending upon the boring bar in use. If the machine is to be used for drilling and tapping only it is furnished without the outboard support and in that shape constitutes an easily handled portable drill. Through the yoke at the top of the column it may be moved from point to point by an overhead crane and set up where required.

According to the *Railway Age*, the mileage of railroad track laid in the United States for the first six months of this year was smaller than for any similar period

since 1898. Only 1284 miles were laid, although upward of 7000 miles are under construction. Work was greatly retarded by the inclement weather of the spring months.

May Iron and Steel Exports and Imports.

A sharp decrease in the exports of iron and steel for May is shown in the report of the Bureau of Statistics of the Department of Commerce and Labor. The total value of the month's exports of iron, steel and manufactures thereof, but excluding iron ore, was $12,118,730, against $13,076,975 in April. Taking the commodities for which quantities are given the exports for May were 74,073 gross tons, as compared with 102,516 tons in April, 89,879 tons in March, 70,429 tons in February and 56,810 tons in January. The details of the month and the eleven months of the fiscal year ending with May are given in the following table:

Exports of Iron and Steel.

	May.		Eleven months.	
	1905.	1904.	1905.	1904.
Commodities.	Gross tons.	Gross tons.	Gross tons.	Gross tons.
Pig iron	3,047	2,031	45,581	31,976
Scrap	798	2,185	18,994	14,639
Bar iron	2,662	2,712	30,551	20,125
Wire rods	74	1,087	14,886	13,419
Steel bars	2,124	2,521	23,232	17,744
Billets, ingots, blooms	17,599	31,527	226,452	144,893
Hoop, band, scroll	83	150	2,751	2,570
Iron rails	....	....	78	1,317
Steel rails	14,709	41,388	387,089	109,793
Iron sheets and plates	757	711	4,631	5,209
Steel sheets and plates	5,343	2,811	62,113	17,166
Tin plates and terne plates	1,045	988	9,448	3,081
Structural iron and steel	6,720	4,375	68,290	30,018
Wire	14,247	11,476	113,670	104,398
Cut nails	692	780	7,518	8,625
Wire nails	3,813	2,642	33,316	30,086
All other, including tacks	360	248	3,506	2,293
Totals	74,073	107,632	1,052,106	557,352

The commodities which show the most important changes, as compared with April, are steel rails, wire and wire nails. The exports of steel rails fell off 18,000 tons, while the exports of wire increased 1300 tons and of wire nails 1900 tons.

The total value of the exports of iron, steel and manufactures thereof, not including iron ore, for the 11 months ending with May was $122,907,300, as compared with $100,267,566 for the corresponding period of the previous fiscal year. The exports of iron ore in the 11 months totaled 227,929 gross tons, against 77,734 tons in the corresponding period of the previous fiscal year.

The imports of iron and steel showed an increase in May. The total value of all imports of iron, steel and manufactures thereof, but excluding iron ore, were valued at $2,475,740, as compared with $2,114,204 in April. Taking the commodities for which quantities are given, the total for May was 37,420 gross tons, against 24,767 tons in April, 25,924 tons in March and 29,472 tons in February. The detailed figures for the month and the 11 months of the fiscal year ending with May are given in the following table:

Imports of Iron and Steel.

	May.		Eleven months.	
	1905.	1904.	1905.	1904.
Commodities.	Gross tons.	Gross tons.	Gross tons.	Gross tons.
Pig iron	24,896	5,184	105,924	187,073
Scrap	1,690	1,290	10,874	26,256
Bar iron	1,778	1,322	22,579	28,058
Rails	252	8,918	8,748	46,550
Hoop, band and scroll	102	28	1,687	1,828
Billets, slabs, bars, &c., steel in forms n.e.s.	1,184	547	8,891	91,316
Sheets and plates	159	114	1,832	9,974
Tin plates and terne plates	5,235	6,422	66,489	49,982
Wire rods	1,445	1,067	13,322	16,822
Wire and articles made from	475	419	3,592	4,743
Structural iron and steel	162	380	2,538	13,605
Chains	29	64	247	364
Anvils	13	31	155	247
Totals	37,420	25,786	246,878	476,818

Pig iron showed the heaviest increase, the imports for May running 13,300 tons over those in April. Scrap showed a gain of 1300 tons and billets of 500 tons. On the other hand, the imports of bar iron fell off 1400 tons and of tin plates 1500 tons.

The total value of all imports of iron, steel and manufactures thereof, not including iron ore, for the 11 months ending with May was $20,863,740, as compared with $24,997,424 in the corresponding period of the previous fiscal year. The importations of iron ore in the 11 months were 689,925 gross tons, against 662,143 tons in the corresponding period of the previous fiscal year.

The American Car & Foundry Company.

The sixth annual report of the American Car & Foundry Company for the fiscal year ending April 30, 1905, presents a financial statement from which the following balance sheet for that year is taken, to which we have added the comparative figures for the preceding fiscal year:

Assets.

	1905.	1904.
Cost of properties, plants, &c.	$58,105,298.42	$57,600,160
Materials on hand, inventoried at cost or less	11,932,514.12	6,034,814
Accounts and notes receivable	9,039,028.47	5,527,161
Stocks and bonds of other companies, at cost, or less	1,343,787.53	1,799,214
Cash in banks and on hand	3,085,640.73	4,089,369
Totals	$83,506,269.27	$75,050,718

Liabilities.

Preferred capital stock	$30,000,000.00	$30,000,000
Common capital stock	30,000,000.00	30,000,000
Audited vouchers for material not yet due and loans payable	10,323,578.69	2,611,428
Pay rolls (paid May 10, 1905)	427,256.31	211,974
Surplus account	12,755,434.27	12,227,316
Totals	$83,506,269.27	$75,050,718

The income statement for the year ending April 30, 1905, is as follows:

Earnings from all sources		$3,754,273.51
Less renewals, replacements, repairs, new patterns, flasks, &c		818,788.68
		$2,935,484.83
New construction charged off		307,367.20
Net earnings		$2,628,117.63
Dividends on preferred stock, 7 per cent.		2,100,000.00
Surplus earnings for the year		$528,117.63
Surplus, April 30, 1904		12,227,316.64
Surplus, April 30, 1905		$12,755,434.27

Following is the statement of working capital:

Working capital, April 30, 1904		$14,627,156.16
Surplus earnings for the year ending April 30, 1905	$528,117.63	
Expended for Memphis plant, additional real estate, and reserved for part payment on Wilmington plant, included in property account	505,137.94	
		22,979.69
Working capital, April 30, 1905		$14,650,135.85

The annual meeting of the stockholders was held June 29 and the retiring Board of Directors was re-elected.

In submitting his report, covering the condition of the company for the year, President Eaton stated that the output of cars had amounted to 35,857, including all types and designs. This, he added, meant a decrease of fully 30 per cent. as compared with the preceding year. As for the other business of the company, which he stated would amount to about 20 per cent. of the total business, there is shown an increase which is entirely satisfactory to the stockholders. He pointed out that the future of the company was particularly bright and that there were on hand orders for 44,000 cars, which is the largest amount of orders for this time of the year in the history of the company.

The officers are as follows: Chairman of the board, W. K. Bixby; President, F. H. Eaton; first vice-president and general manager, W. J. McBride; second vice-president, E. F. Carry; third vice-president, W. C. Dickerman; secretary, D. A. Bixby; treasurer, S. S. De Lano; auditor, J. M. Buick.

The Gutermuth Patent Valve.

An extremely simple and novel valve for pumps, compressors, blowing engines, &c., has been patented by Professor Gutermuth of Darmstadt, Germany. The valve is made from one piece of sheet metal, its dimensions and proportions varying somewhat according to the use to which it is to be applied. Fig. 1 shows the typical form of the valve and Fig. 2 the shape of the blank as cut from sheets of carefully selected material (steel, gun metal, &c.) of very high tensile strength and elasticity. The left hand edge of the blank is first bent at an angle, as shown in Fig. 3, and fits into the slot of a mandrel, Fig. 4. The mandrel is chucked in a machine of special design and turned about its axis, coiling the blank, as indicated in Fig. 1, only that part remaining flat which is to serve as the flap of the valve.

For light pressures, such as occur in blowing engines, the coil and flap are of uniform thickness, as in Fig. 2, but for higher pressures, though the blanks are still in one piece, by a special process two thicknesses are produced. The flat part is left thicker for strength and the coiled part lighter for elasticity, as shown in Figs. 1 and 3. By the proper proportioning of the ports the flap for the highest pressures and heaviest duties need be no thicker than 1-16 inch. To prevent the coils in the flaps from interfering with the clamp, sides of the casings or adjacent valves the blanks are cut a little wider at the end, which becomes the inside of the coil, so that this part is slightly longer than the rest.

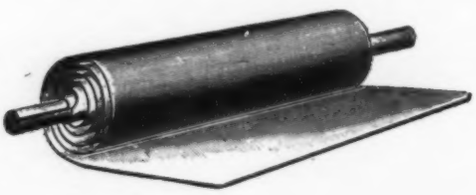


Fig. 1

Fig. 4.

Fig. 2.

Fig. 3

Details of the Gutermuth Spring Flap Valve.

The valves are fitted to spindles of similar section but of slightly larger diameter than the mandrels and are secured simply by slipping them on. The spindles are held in position in any suitable manner by clamps, set screws or otherwise, care being taken that the margin of the flaps are the same on all sides of the ports. Provision is made for turning and locking the spindle to regulate the tension of the valve springs. It is only necessary to clamp the spindles at one end, as the pressure from the valves is extremely slight and the valves can be slipped on from the overhanging end, or the spindles may be clamped in the middle and the valves slipped on at both ends, no outside supports being needed.

In a measure the action of the valve is similar to that of a hinged flap valve or an elastic blade valve, but it is claimed to have many points of superiority over either. The nature of the spring makes a long continued use of the Gutermuth valve possible; the wear is very slight and the elasticity practically everlasting; whereas in a hinged valve the hinge causes friction, hence is subject to rapid wear, and the only way it may be closed is by weights of springs which increase the momentum and introduce new sources of friction.

The Gutermuth valve can be opened to any required degree without straining the material, and the whole of the port is uncovered, as the valve lifts bodily from its seat. The valve is distinguished from all other flap valves in that it has a wiping motion when leaving or returning to its seat, and a very small force is sufficient to open it. The power to raise a valve 4 inches wide, 3 inches long and 1-32 inch thick, having four coils, to an angle of 30 degrees is only 2 pounds, which for the adequate section port area means a pressure of only 0.25 pound per square inch. Such a valve will resist a permanent working pressure of 150 pounds per square inch. Much lighter valves can be constructed for blowing engines, or by suitably strengthening the flaps the valves can be successfully used for hydraulic work, for air compressors for liquid air and even for pressures up to 3000 pounds per square inch, and in any case the elasticity of the coil is the same.

Gutermuth valves are always so fitted that they cover the port opening at an angle, as will be seen in Fig. 5. Advantages gained thereby are that the port is entirely uncovered at a relatively small deflection of the valve, that the resistance of the valve to be overcome by the flow of the water is very small and that the small and peculiar lift of the valve secures a prompt closing when the flow ceases. Another feature of the valve is that no guide is required to prevent it from opening more than sufficient to pass the whole jet. They can be fitted in any position—vertical, horizontal, oblique or inverted.

It will be appreciated that since the valve is of small mass no considerations of momentum enter in, and practically any speed may be obtained by the pump without the slightest danger of failure of the valve to act promptly.

Possible applications of the Gutermuth valve are almost innumerable. Among those which have been put forward by the patentee of the valve as among the most usual are those to new and reconstructed pumps for various duties—feed pumps, sewage pumps, air compressors, gas engine charging pumps and blowing engines. In many cases it is possible to save in the space occupied and to increase the speed by modifying the design of the machine so that this type of valve may be used. Fig. 6 shows the construction of a typical valve seat made in ac-

cordance with the Gutermuth principles and used to replace the mushroom valve in a vertical differential deep well pump. The usual speed of the pump before the conversion was 80 revolutions per minute and afterward the working speed was 180 revolutions per minute.

Fig. 7 shows longitudinal and cross sections of a remarkable pump called the "Spherical" boiler feed pump, built by Rustin & Co., Prague, the design of which is said to have been only possible with the use of the Gutermuth valves. The pump proper consists of one compact and solid casting, which forms the pump barrel, the seat for the valve cone containing all valves and seats, the suction chamber and the pressure chamber. The pump is single acting, has a plunger 2¾ inches diameter x 4 inches stroke, and ordinarily operates about 250 revolutions per minute, although in special tests it has worked up to 450 revolutions per minute. Apart from the flanges the only parts that have to be machined are the seat for the valve cone and the plunger barrel. All the valves open straight in the direction of the flow of the water. All parts are readily accessible for inspection and cleaning by the removal of one 6-bolt cover; the pump occupies a floor space of 5 feet 5 inches x 2 feet 6 inches, including the motor, and is 2 feet high. It is capable of feeding 1225 gallons at 250 revolutions and 1725 gallons at 350 revolutions against any boiler pressure.

The two illustrations given of the application of the valve (Figs. 6 and 7) are sufficient to show the possibilities of the valve and its wide range of adaptability.

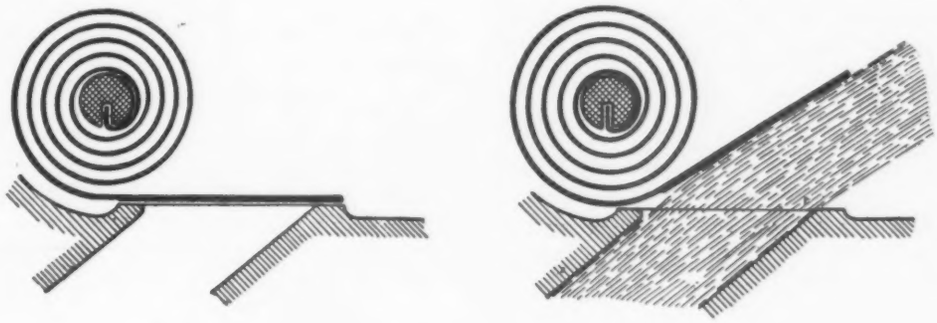


Fig. 5.—Sectional Views through a Valve and Port Closed and Open.

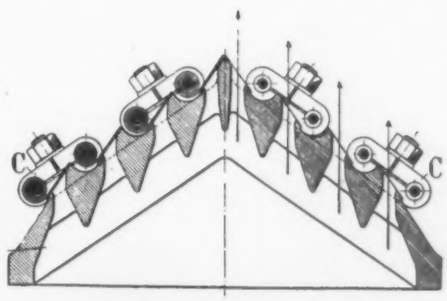


Fig. 6.—A Typical Arrangement of Gutermuth Valves.

The valves themselves are the same in all cases, and in each application it is only necessary to design members to contain the valve seats so as to fulfill the two essential conditions—*i. e.*, that the valve may set diagonally across the port and means be provided for supporting the spindle.

Our foreign trade in manufactured products is growing very satisfactorily. For the 11 months ending May 31 the total exports of domestic manufactures amounted to $493,396,788, against $410,536,478 for the corresponding period of the previous year, or 35.94 per cent. of the total value of all exports, against 30.54 per cent. The exports of iron and steel, exclusive of ore, were respectively $122,907,300 and $100,267,566. The exports of copper were respectively $77,040,227 and $51,989,335.

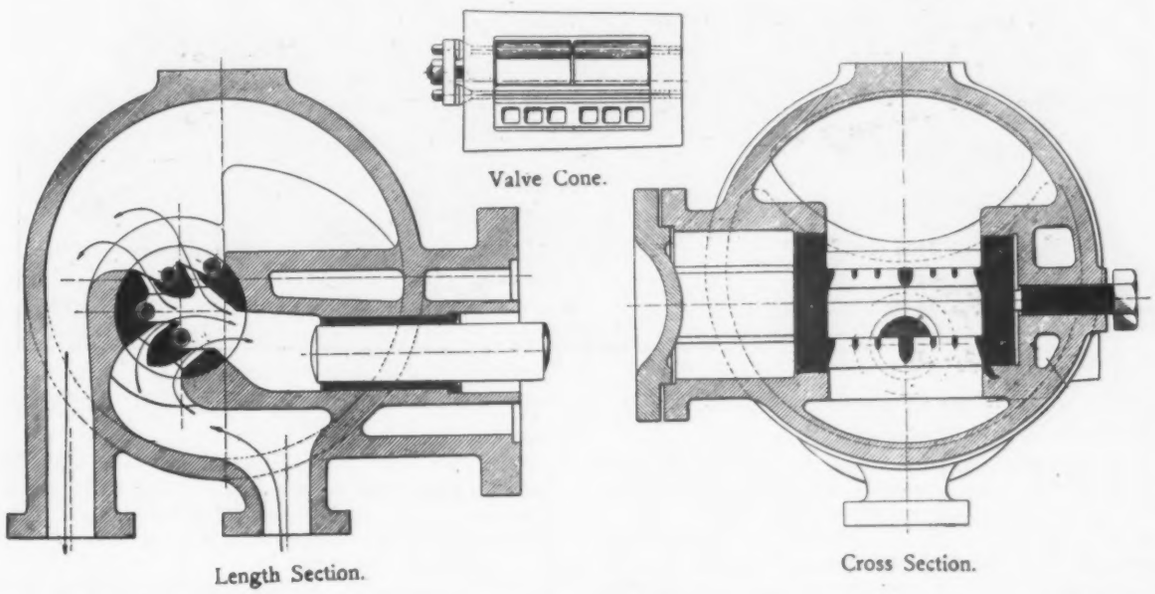


Fig. 7.—Sectional Views and Valve Detail of a "Spherical" Boiler Feed Pump Fitted with Gutermuth Valves.

The Board of Aldermen of Boston, Mass., has formally accepted the offer of Andrew Carnegie of an endowment fund of $400,000 to be used for the maintenance of a trade school to be established by the Benjamin Franklin fund, which is the accumulation of a bequest by that eminent American made a century ago. The condition of Mr. Carnegie's gift is that the institution be patterned after the Cooper Union, New York.

A New Buffalo Underwriter Fire Pump.

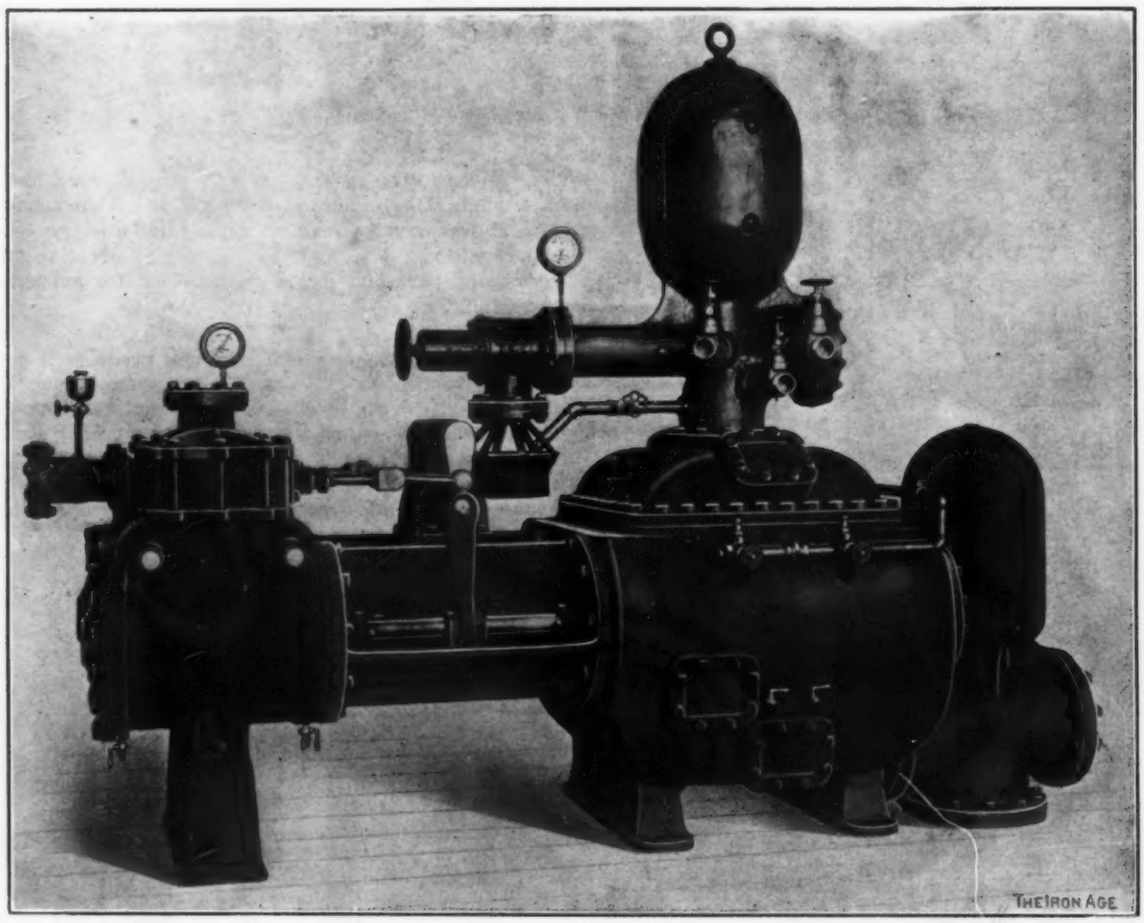
A new model standard underwriter fire pump built in strict accordance with the 1904 specifications of the Associated Factory Mutuals is now built by the Buffalo Steam Pump Company, a firm owned and operated by the Buffalo Forge Company, Buffalo, N. Y. The pump represents a development covering over 15 years and has received remarkable attention to detail in its design. In it it was aimed to make use of all devices aiding proper operations under working conditions; to provide means for detecting, locating and analyzing such troubles as are bound to occur in spite of precautions, and to make the duty of repairing, inspecting, cleaning, &c., easily and quickly executed by making all parts interchangeable and accessible.

The pump is of the duplex type, is substantially built and embodies certain improvements suggested by the experience of insurance inspectors. In 1891 specifications were first drawn up by the Associated Factory Mutual Fire Insurance Company for a fire pump which would be more reliable than the type then in use, providing protection in time of emergency by avoiding all danger of sticking, bursting, nondelivery of rated capacity or inability to operate at the minimum steam pressure. Close attention was paid to the behavior of such pumps and in 1895 more complete specifications were compiled. These were finally revised and more rigidly applied in 1904, and it is in accordance with these that the pump illustrated is built.

The claims for this pump on which the builder lays the greatest stress are that its steam parts, water passages and air chamber are much larger than in common trade pumps, so that a large volume of water can be delivered in an emergency without water hammer, and that it is rust proofed, hence will start instanly after disuse. This is accomplished by making its piston rods and valve rods of Tobin bronze instead of steel and its water pistons, stuffing boxes and rock shaft bearings of brass instead of cast iron. The valve levers are wrought iron forgings or steel castings.

The pump is so designed as to be continuously primed whether wet or dry system is used, but as an additional safeguard a set of brass priming pipes are connected permanently to the water main and are provided with special checks and air cocks. Six large hand holes afford ready access to both sides of the water valves. The vacuum chamber seen at the right of the pump is another feature peculiar to this style of pump and has been found necessary for smooth operation when running at high capacity. It will be noticed that there are two suction inlets, permitting the most convenient connection with a supply pipe, a blank flange being furnished for the unused inlet.

A relief valve of approved make is attached to the delivery pipe immediately under the air chamber and prevents any possibility of wrecking the pump or pipe line through excessive pressure. A pressure gauge on the delivery pipe and a steam gauge on the valve chest indicate at a glance the conditions under which the pump is working. The customary cushioning valves are found on the steam cylinder together with a sight feed lubricator and lever handle pet cocks.



A New Underwriter Fire Pump, Built by the Buffalo Steam Pump Company, Buffalo, N. Y.

All the necessary fittings are furnished with the pump, including a set of two to six hose valves, an overflow pipe with valve and cast iron relief valve discharge cone, four ½-inch air cocks and checks, a stroke gauge and a capacity plate. These pumps are made in five sizes and are thoroughly tested before leaving the works, the water cylinder being subjected to a pressure of 300 pounds per square inch before approval.

The Bureau of Navigation of the Department of Commerce and Labor has made public its annual shipbuilding returns for the year ending June 30, 1905. There were 1054 sail and steam vessels of 263,064 gross tons built in the United States and officially numbered during the year.

The Wm. Cramp & Sons Ship & Engine Building Company.

The report of the William Cramp & Sons Ship & Engine Building Company for the year ending April 30, 1905, was submitted to the annual meeting of the stockholders, held in Philadelphia, June 29. Following is the income statement:

Approximate gross earnings on shipbuilding		$5,490,738.81
Gross earnings from all other departments, including I. P. Morris Company, Kensington Shipyard Company, brass foundry, machine shop and miscellaneous work		1,892,569.76
Total gross earnings		$7,383,308.57
Less wages, cost of materials and operating expenses		6,603,605.58
		$779,702.99
General and miscellaneous expenses		151,774.93
Net earnings from operation		$627,928.06
Income from other sources, interest on deposits, discounts for cash on material bills, &c.		83,966.23
Total net earnings		$711,894.29
Interest charges	$344,287.62	
Taxes and insurance	53,441.13	
		397,728.75
Net earnings		$314,165.54
Credit to profit and loss account April 30, 1904	$2,613,446.65	
Add claim battle ship Maine	148,868.32	
Total	$2,762,314.97	
Less allowances and adjustments of accounts existing prior to April 30, 1903	4,123.16	
		2,758,191.81
Profit and loss account		$3,072,357.35

The above net earnings of $314,165.54 compare with $188,174 in the fiscal year 1904 and $179,198 in 1903.

The company has made the following payments:

Bonds redeemed as per terms of agreement	$25,000.00
Serial notes redeemed, as per terms of issue	160,000.00
Installment of mortgage on Kensington Shipyard Company, reduced as per terms	20,000.00
Real estate	37,500.00
Improvements, new tools and machinery	40,517.17
Railroad tracks on Beach street, purchased from Pennsylvania Railroad Company	12,500.00
Total	$295,517.17

The statement of assets and liabilities as of April 30, 1905, is as follows:

Capital stock outstanding		$6,098,000.00
Bonds and mortgages:		
Twenty-year 5 per cent. notes	$4,760,000.00	
First mortgage 5 per cent. gold bonds	1,350,000.00	
Mortgage on real estate	576,052.00	
		$6,686,052.00
Accounts payable:		
For merchandise	$418,488.48	
Accrued interest on bonds and mortgages	110,791.55	
		529,280.03
Profit and loss account as of April 30, 1905		3,072,357.35
Total		$16,385,689.38
Real estate, machinery, &c.	$12,750,565.55	
Bills and accounts receivable	$872,293.48	
Materials and supplies	528,426.45	
Cash	1,050,279.02	
	2,450,998.95	
Deferred assets—accounts in litigation, &c.	1,184,124.88	
Total		$16,385,689.38

President Henry S. Grove, in an accompanying statement says, in part:

"To those who are interested a careful comparison with the various items contained in the report for the previous fiscal year indicates that substantial progress has been made in the operation and management of the company. The volume of business has been larger and the general expenses have been less, interest charges have been reduced, and the work of paying off the debt of the company continues.

"In our shipbuilding department we have completed and delivered the Colorado and Pennsylvania to the United States Government; the Mohican, Chippewa and Onondaga, freight vessels of about 2700 tonnage each, to their owners. The condition of the yard at this writing is that we have the Tennessee 80 per cent. completed, and if there is no unforeseen delay she will proceed on her trial trip in the autumn and be delivered to the Government during the present fiscal year. The Idaho is 28 per cent. completed, and the Mississippi is 30 per cent. completed. Both these vessels will be launched some time this year. Besides these vessels now building, we are constructing an ice boat for the city of Philadelphia; two large tug boats for the New York, New Haven & Hartford Railroad Company, and two very fine passenger and freight steamers for the New York & Cuba Mail Steamship Company. The work in progress assures a volume of business for the current fiscal year sufficient to secure economic production.

"The I. P. Morris Company has secured contracts for about all the important high service water turbine installations that have been offered the past year, and has about completed or under construction more than 90,000 horse-power of this class of work. It has received much praise for superiority of design and excellence of construction, and maintained its position of highest rank in this department of engineering enterprise. Miscellaneous work for the general public, together with the engines, boilers and apparatus required for the vessels under contract, aggregates a volume of business which will tax the capacity of this department of the company to the fullest extent for many months.

"The Kensington shipyard has also contributed to the profits for the year, and while competition in its field of work has been severe its earnings have been maintained to nearly the same point as last year.

"The brass foundry, through its specialties in fine combinations of metals and success in difficult castings, is making great progress and has just closed a year exceeding in profit the previous one, which was then by far the most prosperous in its history. Our business in this department is increasing with wonderful rapidity. We are constantly making additions to develop and foster the trade we are securing."

The old Board of Directors was re-elected.

The Milwaukee Mechanical Engineers.

There is a very strong probability that the Milwaukee branch of the American Society of Mechanical Engineers will withdraw from the parent society and reorganize on broader lines. The Milwaukee branch was organized last winter with a large and representative membership and has held monthly meetings ever since, which have been well attended and of profit to the members. The national organization, however, is not willing to recognize as eligible to membership many of the members of the Milwaukee branch and it is said in other ways has shown a disinclination to encourage the growth of the branch. It is said that the same treatment has been accorded branches in other cities, such as Cincinnati and St. Louis.

An informal meeting of the mechanical engineers and technical men of Milwaukee, all of whom have been members of the Milwaukee branch, was held at the Plankinton House last week to discuss the plan of reorganization. The meeting was presided over by George P. Dravo, with W. G. Starkweather acting as secretary. It was practically decided to organize on different lines at a meeting to be held in September. At that time arrangements will be made to hold meetings at least once a month, at which papers will be read followed by discussions. It is thought that a society of the character contemplated would be able to enroll between 300 and 400 members.

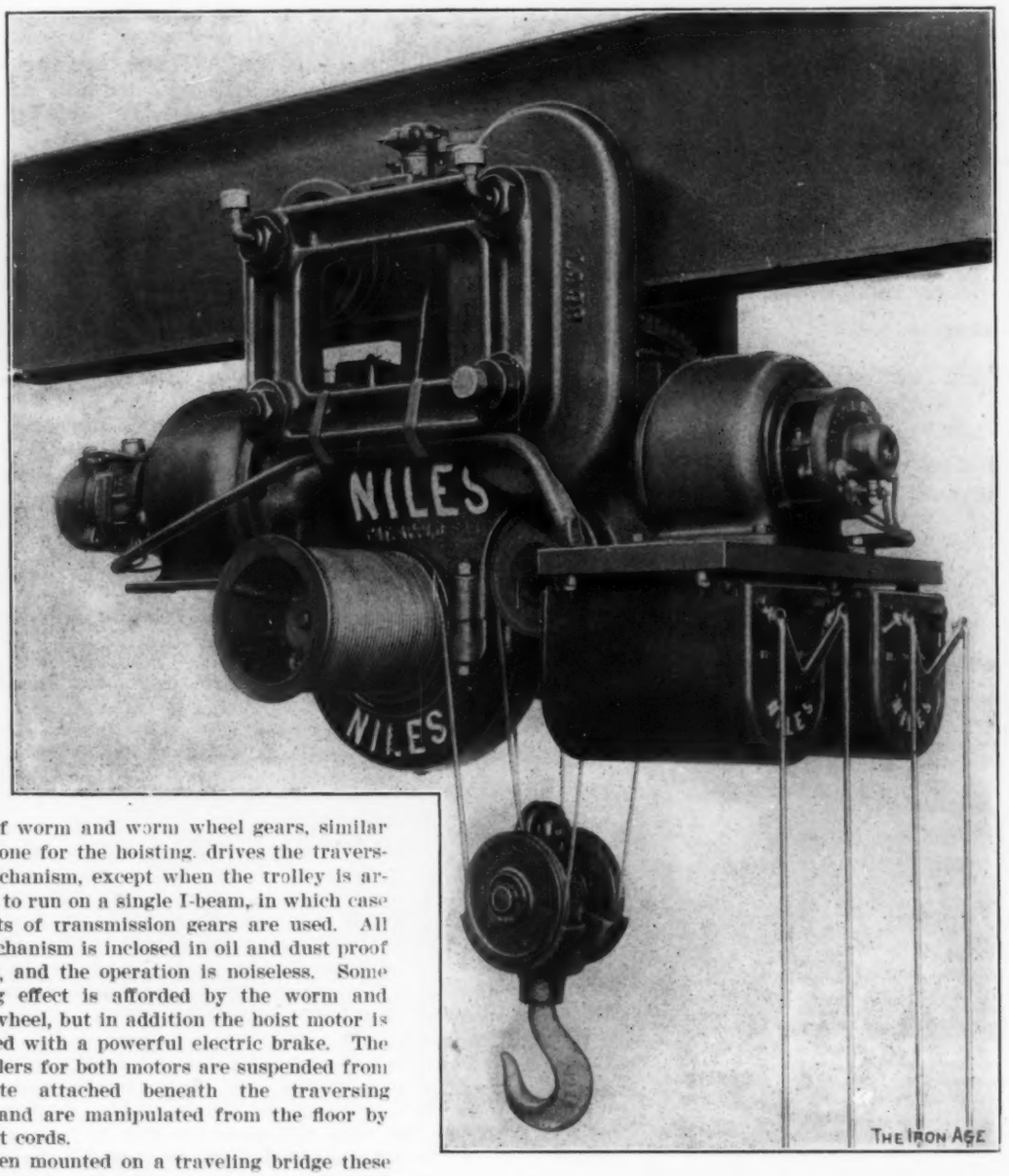
One of the most important lines of Germany is industrial expansion has been in shipbuilding. Figures transmitted by United States Consul-General Richard Guenther, Frankfort, Germany, show that in 1904 the German shipyards turned out 278 steamships of 210,999 gross registered tons and 256 sailing vessels of 49,712 gross registered tons. At the beginning of 1905 they had under construction 152 steam vessels of 285,539 gross tons, of which 9 were men-of-war of a total of 69,640 tons. The production for 1904 includes 22 steamers and some sailing vessels, of about 20,000 tons in all, built for foreign account.

A New Niles Electric Traveling Hoist.

One of the latest products of the crane department in Philadelphia of the Niles-Bement-Pond Company is the electric traveling hoist illustrated herewith. The new Niles hoist is designed for hard, continuous service and, as may be seen from the illustration, is extremely compact, being self contained in a single heavy cast iron frame. The motors are attached directly to flanges of the frame, which take the place of one of the end covers of each motor. A worm on the armature shaft transmits the power to a worm wheel on the drum shaft. Another train of worm and worm wheel gears, similar to the one for the hoisting, drives the traversing mechanism, except when the trolley is arranged to run on a single I-beam, in which case two sets of transmission gears are used. All the mechanism is inclosed in oil and dust proof casings, and the operation is noiseless. Some braking effect is afforded by the worm and worm wheel, but in addition the hoist motor is equipped with a powerful electric brake. The controllers for both motors are suspended from a plate attached beneath the traversing motor and are manipulated from the floor by pendent cords.

When mounted on a traveling bridge these hoists may be used in place of cranes of small capacity. The hoists when so used are arranged to run between two I-beams or channels, which form the bridge, and the controllers for raising and lowering the hook and operating the traversing mechanism may be placed either on the hoist on the bridge, and operated from the floor by cords in the manner as illustrated, or in an operator's cage attached to the bridge.

The sizes in which the Niles hoists are built range from ¾ to 6 tons capacity. They are usually arranged to travel on an I-beam track and will run on straight and curved tracks. Generally a separate motor is provided for traversing, but, if desired, hand traverse may be furnished, or all the traversing mechanism may be omitted and the trolley moved along the track by pushing on the load. The slight additional cost of the electric traverse is stated to be more than compensated for by the increased service obtainable.



A New Electric Traveling Hoist, Built by the Niles-Bement-Pond Company.

The Allis-Chalmers Addition.

The Allis-Chalmers Company last week commenced active work on the extension to its large plant at West Allis, Wis., by awarding contracts for the new buildings and employing 500 men for the preliminary work necessary to their erection. The following contracts were awarded: James Stewart & Co., Pittsburgh, Pa., contract as supervising engineers and managers of construction for the entire work; American Bridge Company, New York, structural steel erected in place for buildings, requiring approximately 6800 tons; Riter-Conley Mfg. Company, Pittsburgh, Pa., structural steel erected in place for the foundry and pattern storage buildings and erection shops, comprising approximately 4000 tons.

The contracts provide for the delivery and complete erection of the steel within 23 weeks from the date of the execution of the contract. It is expected that the company will occupy the new buildings within nine months. Its present West Allis works have a total floor area of 652,000 square feet. The new extensions will add 861,000 square feet, or more than double the present capacity of the works.

SAMUEL S. HOPKINS, president of the Hopkins & Allen Arms Company, which he founded in 1868, died suddenly June 27 at Norwich, Conn., aged 75 years.

Ore Shipments at the Maximum.

DULUTH, MINN., June 30, 1905.—Figures for this month from upper lake ore ports cannot yet be given, but the estimates are that Minnesota mines have shipped 3,000,000 gross tons for the month. This will not permit the movement of the whole Superior region to reach the 5,000,000-ton estimate that has been made unless more business is given old range ports than they have probably done. It is doubtful if the total for the month is up to the estimate. Shipments are pretty nearly at maximum, though both the Duluth & Iron Range and Duluth, Missabe & Northern railroads expect to increase the 1,100,000 to 1,200,000 tons either will do during June.

The movement for the past few days from the larger mines of the Mesaba range has been seriously inconvenienced, if no stronger term is used, by the almost incessant downpours of rain. Many of the large ore bodies of that range occupy depressions in the surface topography, and when to these natural basins there are added the holes made by extensive stripping operations, there are formed drainage basins that it is almost impossible to maintain in a dry condition during wet weather. As the ground gets soaked and the water oozes from every direction ditches and drains are of no avail, and the stripping pits are filled up. This was the case the past week, and not only once, but two or three times, some of these large pits have been pumped out or otherwise drained off, only to be filled again by another tremendous rain a day or two later. This sort of thing impedes operations fearfully and adds materially to temporary costs, while it backs up the ore movement both of railroads and shipping. The weather now seems to be more settled, and it is hoped that little more trouble will be met. D. E. W.

Tell City, Ind., is unique, in that State at least, in that it is a manufacturing city without a labor union. There has never been a strike in its various factories. Labor agitators are not permitted to stay in the town. This is partly accounted for by the fact that in many of the industries the employees are the stockholders.

The United States Coal & Coke Company, an identified interest of the H. C. Frick Coke Company, Pittsburgh, has awarded contracts for the erection of 250 coke ovens in West Virginia. This company already has about 1000 evens in operation in this field and will ultimately have 3200.

The Robertson Valveless Automatic Gas and Gasoline Engine.

The new model of the Robertson automatic gas and gasoline engine is shown in the accompanying Figs. 1 and 2. These give the design and construction in general of sizes from 4 to 12½ horse-power, which are made in single cylinder form. Sizes above these, including 16, 20 and 25 horse-power, are made in double cylinder form. All operate on the four-cycle system.

These engines were designed by the Robertson Mfg. Company, Buffalo, N. Y., after years of practical experience in the use and construction of internal combustion engines. They have several features that aim to overcome serious drawbacks and difficulties in the ordinary construction. It will be noticed that a cross head is employed connecting the piston rod and connecting rod, which works on parallel steel slides. The purpose of this is to eliminate the wear on the walls of the cylinder and to produce a straight line piston travel as perfect as that obtained in a high class steam engine. It is believed that this will result in extending the life of the engine, producing more reliable power, as when a cylinder becomes worn oval or oblong through the action of the trunk type of piston compression is lost and more fuel is used and less power developed. The cross head is of box pattern, cast in one piece, having mill grooved ways for the square parallel guides. Phosphor bronze gibs are provided, which are adjustable to take up wear. This is another feature upon which claims are based, as through this construction any wear occurring on the slides or cross head may be taken up in a few moments, and if new parts are ever required, such as gibs or parallel guides, they can be secured from almost any dealer at little expense; consequently delays are avoided, such as are usually experienced when cylinders are to be repaired or new pistons furnished.

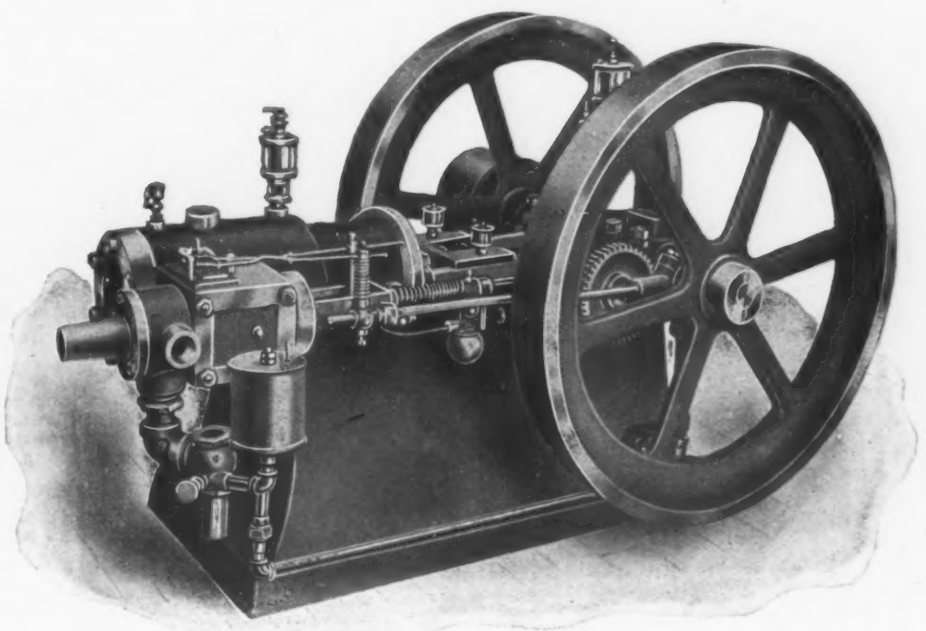


Fig. 1.—Side Elevation of the New Gas and Gasoline Engine Built by the Robertson Mfg. Company, Buffalo, N. Y.

The piston rod in these engines is solidly secured in the piston, while the other end is threaded for a nut and lock nut to connect with the cross head. By this arrangement the piston may be moved forward or backward in the cylinder to obtain more or less compression, sometimes very essential when a change in the fuel is made. The wrist pin for the connecting rod is heavy steel ground to size and is fitted to holes bored and reamed in the sides of the cross head and is secured with set screws. On the cross head end the connecting rod is fitted with a bronze bushing slotted so that it may be adjusted for wear through a cap screw in a

slot in the steel head. The crank end is provided with means for adjustment in nuts and lock nuts. The cranks on all sizes are of open hearth steel, turned by special machinery and ground to size.

The cylinders are large and heavy and are surrounded with a water jacket which covers the head and the mixing chambers. In the design of this machine care has been taken to make each part as independent of the others as possible to facilitate repairing. The cylinder is cast separate from the bed and the mixing chamber separate from the cylinder, all contact surfaces being planed to insure accurate fitting. The fuel is admitted through the intake port in the mixing chamber. This opens on the first stroke of the piston and is closed at the end of this stroke, while the charge is compressed on the return stroke. The charge is fired at the beginning of the next forward stroke and the burnt gases are ejected through the exhaust port while it is held open by a cam gear operated from the shaft.

The connecting rod from the cam to the exhaust port carries a governor consisting of a ball or weight, which acts on the principle of a pendulum. A knurled nut

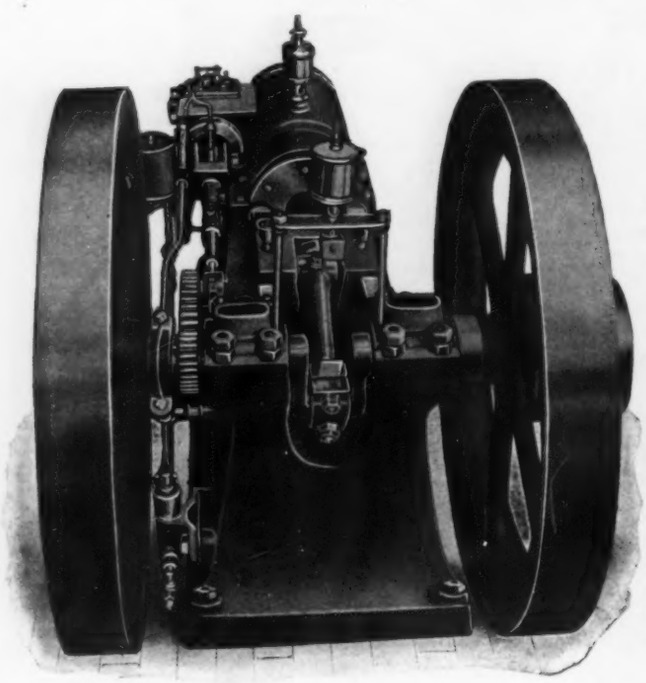


Fig. 2.—End View of the New Robertson Gas and Gasoline Engine.

regulates the tension on a coiled spring which determines the speed, and if desired a change may be made while the engine is running. The suspended ball on the governor carries a steel finger which raises a lock and holds the exhaust port open and the intake port closed when the predetermined speed is exceeded.

Ignition is by a make-and-break electric spark mechanism or by a hot tube, if preferred. The ignitor is placed at the intake port, where it insures the best ignition, all of the new mixture being admitted at this port. The electric ignitor is of a special type, having a compensating lever which holds the points in contact until the proper time to break and cause the spark. In Fig. 1 may be seen the rod which operates the spark mechanism so that when the exhaust port is open and the intake shut no spark is made.

When gasoline is used as a fuel a pump is furnished which draws the liquid from the storage tank, preferably located under ground or out of the building, and delivers it to a small receiver at the intake. The latter has an overflow pipe leading back to the storage tank to return any surplus not used by the engine.

The double cylinder engines are built after practically the same design.

The Oil Industry.

F. H. Oliphant, special agent of the United States Geological Survey, has collected the statistics for the oil industry in the United States during 1904 and now gives out the following tabulated statement regarding the total quantity and value of crude petroleum produced last year as compared with 1903:

	1904.		1903.	
State and district.	Quantity. Barrels.	Value.	Quantity. Barrels.	Value.
California	29,649,434	$8.265.434	24,382,472	$7,399,349
Colorado	501,763	578.035	483,925	431,723
Indiana	11,339,124	12,235,674	9,186,411	10,474,127
Indian Territory. Oklahoma Ter...	1,366,748	5,447,622	138,911	142,402
Kansas	4,250,779	.....	932,214	988,220
Kentucky Tennessee	998.284	984,938	554,286	486,083
Louisiana*	2,941,419	1.068,605	917,771	416,228
Michigan Missouri	2,572	4,769	3,000	4,650
New York	938,234	1,526,976	1,162.978	1,849,135
Ohio:				
Eastern and Southern	5,526,146	$8.993,803	5,585,858	$8,881,514
Lima	13,350,060	14,735,129	14,893,853	17,351,339
Mecca-Belden...	425	1,583	575	1,668
Totals	18,876,631	$23,730,515	20,480,286	$26,234,521
Pennsylvania:				
Franklin	48.499	$193,996	48,209	$192,836
Pennsylvania...	11,251,183	18,311,300	11,305,692	17,976,050
Smith's Ferry..	1,110	1,807	1,255	1,995
Totals	11,300.792	$18,507,103	11,355,156	$18,170,881
Texas	22,241,413	$8,156,220	17,955,572	$7,517,479
West Virginia:				
West Virginia..	12,636,253	$20.557,556	12,893,079	$20,499,996
Petroleum Volcano	8,433	26,225	6,316	16,536
Totals	12,644,686	$20,583,781	12,899,395	$20,516,532
Wyoming	11,542	$80,794	8,960	$62,720
Totals	117,063,421	$101.170,466	100,461,337	$94,694,050

* In addition to this quantity 3,670,000 barrels were produced and unsold at close of 1904.

It will be seen that the production of oil showed an increase of 16,602,084 barrels in 1904 over the production of 1903, and that the total value of the product increased by $6,476,416. To the consumers it will be of interest to note that the average value of the oil per barrel fell from $0.9426 in 1903 to $0.864 in 1904, a decrease in value of $0.786, or nearly 8 cents a barrel.

New England Iron League Outing.—The New England Iron League held its annual outing at Portland, Maine, June 23 and 24, there being 40 gentlemen in the party, who enjoyed one of the most successful occasions of the sort in the history of the League. The members went to Portland from Boston on the evening boat, and after breakfast at the Lafayette Hotel had a sail down Casco Bay. At noon there was a fish dinner at Long Island, and a baseball game followed between the fat men and the lean men. The victory is still a matter of debate, the umpire, Wilbur S. Locke of the Carnegie Steel Company, declaring in favor of the fat men by a score of 11 to 10, but the lean men dispute the decision, charging the umpire with a leaning toward the fat men. After another sail on the bay the party returned to Boston on a special Pullman. The committee in charge of the outing was Henry M. Jones of Megquier & Jones, Portland, Me., president of the League; Charles M. Fitts of the New England Structural Company, Boston, the vice-president, and Harry O. Russ, Boston, of the Phœnix Bridge Company, the secretary. Mr. Russ is also the editor of *Anybody's Magazine*, in which form appeared the bulletin of the outing. It is an attractive eight-page magazine, full of a sort of material which the members and their friends fully appreciate.

Additions are now being made to the plant of the Thos. D. West Foundry Company, Sharpsville, Pa., which will make it the largest ingot mold foundry in the world.

The American Society for Testing Materials.

Eighth Annual Meeting, at Atlantic City, N. J., June 29 to July 1.

The American Society for Testing Materials held its eighth annual meeting at Hotel Chalfonte, Atlantic City, June 29 and 30 and July 1. In attendance, in interest and in the value of the discussions the meeting was regarded as marking a high point in the history of the society. It is noteworthy also that the past year has been the society's record year for members added, for work done and for the amount of literature it has produced. Indeed, the past three years have been marked by rapid and substantial growth, the spirit of the organization and its habit of actually accomplishing what it sets out to do having attracted to it engineers and manufacturers in increasing numbers. Specifications for materials of construction and methods of testing such materials form the broad field of the society's operations, and the more it has done in these lines the more it has found to do. The balance has been quite well preserved in the membership between manufacturers or engineers representing them and consumers or engineers representing them. In addition to these two interests there is a neutral body of engineers connected with technical schools, whose investigations are carried on with a view to adding to the sum of scientific information on materials of construction. These tend to preserve the balance between interests sometimes conflicting.

It is only fair to say that the marked growth of the past year is largely due to the energetic effort of the society's secretary, Prof. Edgar Marburg of the University of Pennsylvania, Philadelphia. That the work done at the annual meetings has had much to do in adding to the society's membership is also evident. Seven sessions in two and a half days, and all for downright work, is an unusual record. The skillful handling of Dr. Dudley, the president, is a large factor here. Always ready with comment himself, he has an admirable faculty of drawing out discussion.

FIRST SESSION.

More than 100 members and guests were present when the president, Dr. Charles B. Dudley, Altoona, Pa., chemist of the Pennsylvania Railroad, opened the first session of the meeting on Thursday afternoon. Later additions brought the registration for the meeting close to 200, as against 150 last year, which was high point up to that time.

Executive Committee's Report.

The annual report of the Executive Committee was presented in printed form. It showed 220 additions to the membership in the year and a loss of 28, making the net gain 192 and the total membership at present 677. The receipts of the year were $6026.16 and the expenditures $5421.31, leaving a balance of $604.85. Eight committees had been added in the year—namely, J, on Foundry Coke; K, on Standard Methods of Testing; L, on Sewer Pipes; M, on Staybolts; N, on Lubricants; O, on Uniform Speed in Commercial Testing; P, on Fire Proofing Materials; Q, on Structural Timber. The number of technical committees is now 18. The report went at some length into the relation of the American Society for Testing Materials to the International Association for Testing Materials and recommended a change in by-laws eliminating the proviso that $1.50 from each member's dues be sent to the International Association for membership in that society. Reference was made to the visit to the United States in the fall of 1904 of the secretary of the British Engineering Standards Committee, who met at New York with Committee A, on Standard Specifications for Iron and Steel, for the purpose of comparing notes. The secretary in his report to his committee expressed the view that closer co-operation between the British committee and the American Society for Testing Materials would no doubt lead to a harmonizing of methods of testing and, where the practice permitted it, of specifications. Differences in practice in the two countries would prevent complete harmonizing of sections and specifications, but on many points co-operation could be secured with advantage. The Executive Committee expressed its full sympathy with this view.

Relations with the International Society.

Secretary Marburg enlarged verbally on that portion of the Executive Committee's report referring to the relations of the American Society for Testing Materials to the International Association. The recommendation of the Executive Committee was that hereafter members of the American Society who desired to have membership also in the International Association should forward $1.50 annual dues direct. The secretary said that probably 200 to 300 members would remain in the International Association under the proposed arrangement, adding that in Germany the national society for testing materials, similar to the American Society, sustained the relation to the International Association which the Executive Committee now proposes, and a very large proportion of the members of the German Society held individual affiliation with the International Association. In the further discussion of the matter some of the members thought the action proposed might interfere with the approach toward international specifications which American engineers had been attempting to make for some years. To this it was replied that the foreign members of the International Association for Testing Materials had never shown any willingness to unite on an international specification, but had distinctly said that questions relating to testing were all that could be considered by the International Association. The commercial phase of the question also received some attention in the discussion, in view of the advantage to American manufacturers which it was hoped would result from the establishment some day of international specifications. The outcome of the discussion was the passing of a resolution affirming the action of the Executive Committee and referring the proposed amendment to the by-laws to a letter ballot of the membership. In the same connection a motion was adopted that the American Society for Testing Materials retain its membership in the International Association and pay to the latter not less than $100 a year. The sentiment seemed very strongly in favor of conciliatory action, but what was complained of particularly was the inaction of the officers of the International Association. It had been very difficult to get answers to ordinary letters of inquiry concerning the work of the association, and the impression was that very little was being accomplished.

The chair appointed H. E. Diller of Chicago, Richard L. Humphrey of Philadelphia and Edgar B. Kay, University of Alabama, Tuscaloosa, Ala., tellers for the election of two members of the Executive Committee for the coming term. They announced later that 109 ballots had been cast, and that W. A. Bostwick, metallurgical engineer of the Carnegie Steel Company, and John McLeod of Philadelphia had received the full number.

Standard Methods of Testing.

Prof. Gaetano Lanza, Massachusetts Institute of Technology, chairman of the Committee of Standard Methods of Testing, presented a report outlining the work to be done by the committee as follows:

The object of the work of the committee should be to make a careful study of the methods of tests employed in America, in England, in France, in Germany, in Austria and in Russia, determining as far as possible what is the degree of accuracy that can be secured with the methods at all commonly employed, as well as with those which they decide to recommend. The subcommittees should make reports, giving evidence obtained from all the literature published upon the subject, from the practice of the various testing laboratories in different parts of the world and, as far as possible, from any

special sets of tests that can be made for them. They should also report their recommendations in the light of the evidence thus obtained and in view of the degree of uniformity that it is, in their opinion, feasible to obtain throughout the countries named above. A list of proposed subcommittees, with details to be considered by each, is as follows:

I. On forms, dimensions, selection and preparation of tensile test specimens, and the conditions necessary to secure correct testing machines. Details: *a*, Different gauged lengths; *b*, Dimensions of cross section, for round and for rectangular sections respectively; *c*, Minimum distance between each end of gauged length and beginning of shoulders; *d*, Modes of testing testing machines; *e*, Modes of holding test specimens; *f*, Effect of different speeds of testing; *g*, Proper manner of selecting and of preparing tensile test specimens.

2. On the general requirements for the measurement of elongations for the purpose of determining the modulus of elasticity, elastic limit, yield point, &c., including limits of accuracy attainable with short gauged lengths, especially 2 inch and 1 inch. Details: *a*, General requirements for the measurement of elongations for determining modulus of elasticity, elastic limit, yield point, &c.; *b*, On how many sides and on which sides of the specimens should measurements be made? *c*, Degree of precision obtainable by each method; *d*, Degree of accuracy needed in different cases; *e*, Within what limits of accuracy can measurements be made upon shorter gauged lengths, especially upon 2-inch and upon 1-inch gauged lengths? *f*, Degree of accuracy obtainable with different methods of holding not only in the breaking strength, but also in the determination of modulus of elasticity, elastic limit, yield point, &c.; *g*, Effect of different speeds of testing.

3. On results obtainable from transverse test specimens. Details: *a*, Forms and dimensions of transverse test specimens; *b*, Comparison of breaking strengths obtained with different forms and dimensions; *c*, What can be ascertained as to modulus of elasticity, limit of elasticity, yield point, &c., by means of transverse tests, and with what degree of accuracy? *d*, Comparison of results obtained from transverse tests and those obtained from tensile tests; *e*, Effect of different speeds of testing.

4. On requirements for compression tests. Details: *a*, Effect of different ratios of length to diameter, in small lengths—*i. e.*, in ordinary compression specimens and not in columns; *b*, Effect of different kinds of compression platforms in the case of different materials tested for compression; *c*, Lengths and gauged lengths needed to obtain measurements with sufficient accuracy to determine modulus of elasticity, elastic limit, yield point, &c.

5. On impact tests. No details will be specified here.

6. On tests of full size specimens. Details: A.—Tension. *a*, Eye bars; *b*, Counterbraces; *c*, Anchor bolts; *d*, Connecting rods in tension; *e*, Parallel rods in tension; what measurements should be made to obtain average values of modulus of elasticity, limit of elasticity, yield point, &c.? B.—Compression. *a*, Columns for bridges; *b*, Columns for buildings; *c*, Connecting rods in compression; *d*, Parallel rods in compression; *e*, Piers of masonry. C.—Transverse. What measurements should be made and how should they be made? *a*, I-beams; *b*, Plate girders; *c*, Trusses; *d*, Arches of steel and arches of masonry. D.—Shearing. *a*, If pure shearing can be obtained, how can it be done? *b*, Riveted joints; *c*, Shafting; *d*, Shearing in beams.

7. On methods of chemical tests. Details: *a*, Extent to which it is wise to include such tests in our recommendations; *b*, Degree of accuracy that can be obtained with different methods; *c*, Degree of accuracy needed in different cases.

8. On metallographic tests. Details: *a*, Extent to which it is wise to include such tests in our recommendations; *b*, Degree of accuracy that can be obtained with different methods; *c*, Degree of accuracy needed in different cases.

9. On miscellaneous tests, as drifting, punching, nicked bending, quenched and cold bending and torsion. No details will be specified here.

On motion the scheme presented by the committee was ordered published as a basis of future work.

Paul Kreuzpointner of the testing laboratory of the Pennsylvania Railroad, Altoona, Pa., presented the report of the Committee on

Uniform Speeds in Commercial Testing.

The committee recognized, the report said, that a maximum speed in commercial testing is desirable—that is, a speed which, while facilitating a large output in the laboratory, is still safe and reliable enough in every day engineering practice. A series of tests had been conducted in which the speed varied from 1 inch up to 5, 6 and 8 inches per minute. Only the differences in results with 3 and 6 inch speeds really came under consideration, since the 3-inch-speed has been in use for a long time. The tables given in the report showed that out of 20 cases of difference in per cent. of elongation, due to difference in speed, the difference is less than 1 per cent. in 13 cases, with steel as high as 0.45 and 0.60 per cent. carbon, and in the 7 remaining cases, where the elongation reaches 1 per cent. or more the elongation is lower in 5 cases of higher speeds and higher in only 2 cases. In the boiler steel tested the greatest difference between a ¾-inch and a 6-inch speed was 2680 pounds, while the maximum difference between individual test pieces was found to be 1970 pounds and 4.5 per cent. elongation, while the greatest difference due to speed was 4.3 per cent. elongation. The conclusion of the committee, as the result of its preliminary work, is that a 6-inch speed of testing may be employed with metal of 0.45 carbon and less, without detriment to reliability of results.

Prof. Ira H. Woolson of Columbia University, chairman of Committee P, on Fire Proofing Materials, reported that the committee met on May 24 and laid out its work. Rudolph P. Miller, the committee's secretary, told of the line of investigation proposed—namely, to establish standards of tests to which fire proof materials should be subjected. It will establish such standards for the testing of the following forms of construction: Fire proof floor systems, fire proof coverings for columns and fire proof partition construction. For the present the committee will accumulate data on methods of tests and results.

Committee Q, on Standard Specifications for the Grading of Structural Timber, reported progress.

SECOND SESSION.

A joint meeting with the Society for the Promotion of Engineering Education was held Thursday evening, the latter organization having concluded on Thursday its annual meeting. The annual address of President Dudley, of which a liberal synopsis appears elsewhere, was the leading feature of the evening.

College Courses on Materials of Construction.

Prof. W. K. Hatt of Purdue University presented a paper outlining a course of laboratory instruction in testing materials, and asked criticisms of the course from professional testing engineers.

A paper on "A Course in Properties of Materials" was presented by Prof. G. L. Christensen, Houghton, Mich. He outlined the work done in a course of 23 weeks at the Michigan College of Mines, Johnson's "Materials of Construction" being taken as the text book. The laboratory work was designed chiefly to illustrate the course as given in the text book. The paper gave in considerable detail a description of the tests on wood which had been carried out at the Michigan College of Mines in the course described.

Following the two papers on testing courses there was a general discussion, which took a wide range and was participated in by Professor Hibbard of Cornell University, Professor Goss of Purdue University, Wm. Metcalf of Pittsburgh, Mansfield Merriman of Lehigh University, Gaetano Lanza, Bradley Stoughton of Columbia University, Wm. Kent of Syracuse University and J. E. Sperr of Michigan College of Mines.

Government Tests of Materials.

Joseph A. Holmes was on the programme for a paper on the plan and scope of the proposed investigation of structural materials under the auspices of the United States Geological Survey. The reading of the paper was passed, and in its stead Mr. Holmes made a statement

of the work thus far done by the new department of the Survey. One branch of the work related to mineral technology, and under this head the first investigation entered upon was the testing of fuels at the St. Louis Exposition. Good results had already been obtained in this investigation. A single illustration given by the speaker was the establishment of the fact that average bituminous coal yielded two and one-half times as much power through the medium of gas producers and gas engines as when burned under a boiler to furnish steam for an engine. Another branch of the work was that relating to structural materials. The investigation related to the behavior of structural materials in actual use. The lines already under way are cement, sand from crushed stone and steel and reinforced concrete. An Advisory Board has been organized, composed of representatives of the various engineering societies, the plan being to keep the work as close as possible to the engineer. Instead of starting on new lines the purpose is to have the investigation coincide with the work already in progress under the auspices of associations. The information obtained is to be put freely at the disposal of manufacturers and engineers, and the co-operation is solicited of societies of all names engaged in similar operations.

THIRD SESSION.

Beginning at 10 o'clock Friday morning, two simultaneous sessions were held in adjoining rooms. The Cement Section, in which some important results have been achieved in the past three years, had a very interesting meeting, presided over by R. W. Lesley. Dr. Dudley presided at the meeting of the Section on Preservative Coatings. That the problems connected with the painting of iron and steel structures are being earnestly studied was evidenced by the mass of experimental data developed by the discussions of the morning.

Wm. M. Davis, oil inspector in charge of lubrication, American Sheet & Tin Plate Company, reported that the Committee on Standard Tests for Lubricants, of which he is chairman, held a meeting in Pittsburgh in May and organized its work. At present there are a half dozen methods for the viscosity test, with no means of comparing them. Other tests for which standards will be formulated are the burning test, cloud test, chilling and freezing tests. An important question before the committee relates to the extent to which a friction testing machine can be used to obtain the lubricating value of oils and greases.

Report on Preservative Coatings.

A printed report was presented from Committee E on Preservative Coatings for Iron and Steel, S. S. Voorhees, engineer of tests, Treasury Department, Washington, chairman. The committee says that it never expects to be prepared to recommend any particular paint for any particular exposure, but that it is seeking to discover methods of conducting laboratory tests which will indicate the protective value of a paint under certain known conditions of exposure. Five subcommittees have been appointed, dealing respectively with methods of conducting field tests, methods of conducting service tests, permeability of paint films, permanency of paint films and preparation of iron and steel surfaces for painting. The idea of the committee in thus organizing the work is that the service tests act as a check on the field tests; that laboratory tests as to permeability should be accepted as of value only when found to be in accord with the field and service tests, and that the permanency of a film in its impermeability and other protective qualities should throw light on the results obtained by field and service tests.

The subcommittee on field tests reported a plan for such tests extending over five years and possibly indefinitely. The tests are to be made on the following structures: Tunnel sections, as the New York Subway; railroad bridges exposed to action of locomotive gases, railway bridges not so exposed, highway city bridges and viaducts, highway country bridges and viaducts, elevated railroad structures, the New East River Bridge over Blackwell's Island, and the Manhattan Bridge, roundhouses and terminal sheds, gas holders, metal sidings on warehouses, piers, and all varieties of marine painting excepting bottoms.

The subcommittee on permanency of paint films referred in a general way to the plan it would adopt in its investigations.

Relative to the preparation of iron and steel surfaces for painting, the use of hammers, steel scrapers and wire brushes was recommended for dirt, rust and mill scale, and benzine for oil and grease. The usual objections urged against the sand blast were the cutting down of the output of the paint shops and the lack of space in which to do the work. The committee recommended, however, that specifications calling for the use of the sand blast be insisted upon.

"Proper Methods in Conducting Painting Tests" was the subject of a paper by G. W. Thompson, chemist of the National Lead Company, Brooklyn. He referred particularly to paints which, while protective, are used to produce a desired finish of appearance, and the paper detailed the method of testing which should be required.

Painting Steel Cars.

A topical discussion on "The Best Method of Painting Steel Cars" was opened by F. P. Cheesman, National Paint Works, New York. He considered first the painting of new cars and second the repainting of cars. The speaker contended that it is money thrown away to attempt to furnish first-class material for the painting of steel cars as now carried on. Instead of applying two coats a day, as is the general practice, he believed better results could be obtained by the application of but one coat. For this the pigment base should be pure blue lead, the vehicle pure raw linseed oil and the drier a pure selected turpentine. The latter should be both binder and drier, and only enough should be used to accomplish the drying in ten hours. This shop coat should be followed in six months with two coats of paint, all rust being removed by scraping with wire brushes and the abrasions repainted with blue lead. The speaker held that rust will not progress under blue lead. As a rule the drier used at car shops is not what it should be in quality. "While they are usually very particular to see that the linseed oil is pure, the large amount of drier added (in many cases as much as 2 gallons of drier to 1 gallon of oil) destroys completely the life of the oil and makes the paint so brittle that in some instances it commences to peel within two weeks after it has been painted." For the repainting of cars the speaker proposed: After the surface is put into proper condition by the removal of all rust and the retouching with blue lead of all bare spots use a coating of a paint made approximately of about 50 per cent. pure carbon black, 15 per cent. of pure white lead, 15 per cent. of pure white zinc and 20 per cent. of selected inert pigment, non-hygroscopic in its nature, and the vehicle to consist of pure raw linseed oil and selected driers. Particular care should be taken to avoid the use of the large flat brush now generally used for this work.

Varied Requirements for Varied Use.

As part of the discussion on "Standard Specifications for Preservative Coatings for Steel" Maximilian Toch of New York presented a series of interesting lantern slides illustrating the widely varying requirements of the surfaces to be covered, these differing situations calling for differing properties in the preservative coatings. It cannot be said that red lead is not the thing and that another base is essential, or that graphite will not answer, while red lead is necessary. Both are good under proper conditions. "The same paint that will do for the preservation of a hand rail subjected to electrolytic action will manifestly not answer for steel that is to be immersed in water impregnated with benzol. A coal car and a steel stack cannot be treated for purposes of preservation in an analogous manner, and so likewise an elevated structure must be painted totally different from the steel structure of a subway. A paint that may answer its purpose perfectly when subjected only to temperatures having a range of 40 degrees and never being subjected to brilliant light may obviously fail when exposed to the sunlight and subjected to a variation of temperature of 130 degrees in one year. I am quite sure that we have not sufficiently studied the action of electricity on paint and steel, and it is necessary that before long we take up this matter very seriously." The speaker called atten-

tion to the factor of progressive oxidation—rust producing new rust. Minute air bubbles are often introduced by the action of the bristles of the brush when the paint is applied, and absorption of moisture is often rapid.

Paper Covering for Steel.

Louis H. Barker, who is connected with the Pennsylvania Railroad, read a paper on "Protection of Iron and Steel Structures by Means of Paper and Paint," which detailed the results of tests that have been carried on since 1893 using paper instead of paint to protect steel structures. Mr. Barker showed a series of bars, half the length of which had been covered with paper and the other half painted in the usual manner. The paper was put on after the bar had been covered with an adhesive substance, the edges of the covering being lapped. In the samples shown the paper was still intact and unbroken, while the painted portion of the bar showed plainly the need of recovering. The results attained had been highly favorable to the paper. At the Jersey City station of the Pennsylvania Railroad a very considerable use has been made of the paper covering and with entire satisfaction.

Discussion.

In the informal discussion of the papers of the morning a vast amount of experience was offered, going to show that the proper protection of steel structures is very far from being a solved problem. Dr. Dudley called attention to the statement made that rapid drying paints are poor and that slow drying coverings are better. His own experience had led him to the conclusion that a paint might dry in two hours and be as good as though it took a week to dry. The trouble was that it was customary in order to get rapid drying to add large amounts of poor drier—one that has been "overcooked." Tests were conducted at Altoona in which japans were used that were cooked very slowly. Three boards were covered with three different paints. The same pigments and oils were used and the paint was applied the same. But in one case 5 per cent. of drier was used; in another half the liquid in the paint was drier; in a third the amount of drier was a mean between the other two. After three years the boards were examined and the paints on all three were in an excellent state of preservation. The one with the 5 per cent. drier was slightly the more elastic, the one with the medium amount of drier somewhat less elastic and the one with most drier the least elastic. However, the difference in elasticity was small.

Mr. Thompson said that not much light had been thrown on the question of the permeability of paint by moisture, whether it is porous or whether permeable by osmosis. Since some manufacturers are using prepared linseed oil in their paints the question arises why the consumer does not learn to use prepared or thickened oils. Paint users may have made a mistake in thinking that they can take raw linseed oil and add drier to it and get the same results as with oil boiled at 600 degrees. Referring to the advocacy of "blue lead" by one speaker, Mr. Thompson questioned if blue lead, containing, as it does, an unoxidized sulphur compound, is a good thing to put on iron and steel which it is desired to protect from oxidation. In the case of coal cars, for example, oxidation has always been attributed to the sulphur in the coal.

Joseph C. Blanch, New York, called attention to the influence of electric currents as one of the most effective rust producing agencies. Referring to the Subway in New York he spoke of it as constituting, with its iron, copper, lead and a very large electric current, a complete and gigantic electrolytic cell. The question of protecting iron against electro-chemical action becomes most important. The speaker cited the analogy of iron acted on by acid. While it is attacked by nitric acid, yet if dropped into concentrated nitric acid it is no longer soluble in the acid, but becomes passive iron. It is not possible to eliminate electrolysis or to eliminate humidity or to change the atmosphere, but it is possible to change the condition of the iron and to introduce an agent into the paint covering it that will prevent electrolytic action by absorbing the oxygen.

Cyril de Wyrall, superintendent of painting, Interborough Rapid Transit Company, New York, spoke of three paints that had proved as satisfactory as others on the Subway work and all dried in ten minutes. In two red lead was used and in the third white lead and linseed oil. On section 5 of the work there were evidences of great corrosion on the steel work in eight months after it was put in place. The speaker had contended at the start that something else was needed than linseed oil as a vehicle. Other mediums were tried in a series of tests, the outcome being the decision to eliminate linseed oil because of its tendency to saponify. In times of high humidity of the air steel coated with linseed oil paint was often 24 hours in showing moisture—evidently absorbing it like a sponge—while columns coated with the other mediums used would drip in two or three hours. The paint used on the Subway after the series of tests referred to was condemned in laboratory tests, but stood up well under service tests. The speaker referred to some experiments with insulating paint. He had coated a section of the contact rail in the Subway with such a paint and believed the covering gave complete insulation.

Dr. Dudley believed the advance made in respect to preservative coatings for iron and steel since the American Society for Testing Materials had taken up the subject was greater than in many years preceding. The society's method of making up its committees, dividing them about equally between consumers and producers, contributed greatly to thoroughness of investigation. Referring to Mr. Barker's experiments with paper coverings Dr. Dudley said that one fact seemed established—that if a coating impervious to moisture could be applied to metals such a coating guaranteed protection. The great trouble is with moisture. The studies of the Pennsylvania Railroad laboratories all lead to one idea—that the method of applying paints is of the utmost imporance. It is a question if it is possible to apply paint with a brush and not leave air bubbles.

FOURTH SESSION.

The Friday afternoon session was transferred to the theater of the new steel pier, and the attendance was large in view of the discussion expected on steel specifications. Committee A submitted a printed report on Standard Specifications for Iron and Steel. The secretary, Professor Marburg, brought the report before the meeting in the absence of Wm. R. Webster of Philadelphia, the chairman of the committee. He said it was the result of four sessions of Committee A in Philadelphia, December 9 and 10, 1904, presided over by Dr. Dudley and C. C. Schneider, at which were considered six sets of specifications: 1. Structural steel for bridges and ships. 2. Open hearth boiler plate and rivet steel. 3. Steel rails. 4. Steel castings. 5. Steel axles. 6. Steel forgings. The committee decided to make two specifications instead of series 1—one to relate only to steel for ships. As the Engineering Standards Committee of Great Britain had recently issued a set of specifications for ship material, and as Committee A at its fall meeting will consider this in connection with its own with a view to possible changes, it was decided to postpone the report on ship steel.

Specification for Bridge Steel.

The committee recommended the adoption under the title, "Standard Specifications for Structural Steel for Bridges," of the "Specifications for Material for Steel Structures," adopted by the American Railway Engineering and Maintenance of Way Association, with amendments approved March 4, 1904. Committee A recommended a change in section 3, however, and this was the subject of considerable discussion. Section 3 read as follows: "Tensile tests of steel showing an ultimate strength within 5000 pounds of that desired [60,000 pounds] will be considered satisfactory, except that if the ultimate strength varies more than 4000 pounds from that desired a retest shall be made on the same gauge, which to be acceptable shall be within 5000 pounds of the desired ultimate."

Committee A recommended that the clause relating to retest read, "may be made." J. P. Snow, chairman of the committee which prepared the Maintenance of Way Association specifications was present and explained the

position of that organization. They were not satisfied, he said, that the leeway should be 10,000 pounds. They wanted it 8000 pounds, and if the American Society for Testing Materials would accept that his committee would cut out the retest. The danger was not with material falling below but with material running too high in tensile for the punching and shearing of bridge works; and where the steel ran up to 65,000 pounds it was really too high.

The discussion that followed was generally participated in, the speakers including Messrs. James Christie, C. C. Schneider, Frye, P. E. Carhart, John McLeod, C. L. Huston, T. D. Lynch, Loyal, Wm. Metcalf, Chas. M. Mills, J. C. Ramage, J. A. Kinkead, producing and consuming interests being about evenly divided. It was argued, on the one hand, that after a 5000 margin either way had been specified material within it should be accepted; that two sets of test pieces was a hardship to the manufacturer; that where the bridge engineer had a factor of safety of six it was scarcely necessary to contend over a 1000-pound variation in a test. It was pointed out that the steel manufacturers, instead of the two kinds of structural steel formerly provided for—one 52,000 to 62,000 pounds and the other 60,000 to 70,000 pounds—had voluntarily narrowed down to one description with a range of 10,000 pounds. It was not necessary to narrow down still further to 8000 pounds when it was quite well established that the other limit was safe.

It was finally decided to change the committee's recommendation so as to leave the matter of retest at the discretion of the inspector, and section 3 was also changed by the elimination of the first part, so that it was made to read: "If the ultimate strength varies more than 4000 pounds from that desired a retest may be made, in the discretion of the inspector, on the same gauge, which, to be acceptable, shall be within 5000 pounds of the desired ultimate."

Mr. Snow asked that a slight change made by his association be adopted—namely, that for the cold bend test of steel castings for bridges the diameter of the mandrel be three times the thickness of the test piece. This was agreed to.

A slight change made by Committee A in section 11, designed to make the statement concerning elongation more definite, was also approved, and the specification was referred for letter ballot.

Open Hearth Boiler Plate and Rivet Steel.

The society's present specifications are in harmony with those of the American Master Mechanics' Association. The committee considered, however, two changes proposed by the American Society of Mechanical Engineers. The first reduced the maximum sulphur in flange or boiler steel from 0.05 to 0.04. The second provided that fire box steel be specified at 55,000 pounds per square inch with an allowable variation of 5000 pounds above or below, instead of 57,000 pounds per square inch with a like variation; also that the determination of the yield point for ordinary grades be omitted. The committee recommended against these changes, since no specific reason for them had been advanced, and the recommendation was adopted.

While this specification was under consideration Dr. Dudley said that barring cases where abrasion is a factor the Pennsylvania Railroad engineers were gradually coming up a little on strength of boiler steel. Personally he would prefer 60,000 pounds tensile strength in the specification, with 5000 pounds variation.

Wm. Metcalf recited some experience with boiler steel and cautioned against getting the steel down too low in carbon and filling it with oxygen.

Specifications for Steel Rails.

The committee recommended several changes in the Maintenance of Way Association's specifications, which were based originally on the American Society for Testing Materials' specification. The drop test section was changed to provide for a test from every fifth blow instead of from every blow, and the test piece to be taken from the top of the ingot, instead of "preferably" from the top. The drop hights were changed, for 65-75, 75-85 and 85-100 pound rails, from 18, 20 and 22 feet to 17, 18 and 19 feet, respectively. The committee thought that since the tests were all to be from the top of the ingot, the number of tests should not be increased nor the hights of drop.

In the ensuing discussion Albert Sauveur of Boston expressed satisfaction that his contention of several years that rail test pieces should be taken from the top of the ingot had been finally indorsed. He moved a further amendment, which was adopted, that where a rail broke under the drop test the two additional test pieces from the same blow be also taken from the top of the ingot.

As part of the discussion Robert Job, chemist of the Philadelphia & Reading Railroad, presented a paper on "Some Causes of Failure of Rails in Service." A statement in the paper that there had been a retrogression in the soundness of rails, due, as the speaker intimated, to segregation, pipes and blow holes in the rail steel, was questioned by H. H. Campbell, who said that a steel that pipes is generally sound. Mr. Job replied that of rails that failed in service there was not so great a proportion that showed pipes as of those that showed general unsoundness, due to blow holes. He had found the best results with 0.60 carbon steel, at which Mr. Campbell expressed surprise, since with softer steels there was least danger from pipes. Steel of 0.35 carbon could be made with few pipes, while in 0.45 to 0.55 carbon steel pipes were much more frequent.

The statement of Mr. Job that rails of earlier years, with a life of 15 years and sometimes 30 or 40 years, were better than those of to-day brought from W. A. Bostwick of the Carnegie Steel Company the observation that rails taken up some years ago did not receive the same scrutiny that is now given all cases of failure by the well organized testing departments of recent years. A vast amount of investigation is now being done.

Dr. Dudley thought the larger ingots of to-day are responsible for some of the increasing difficulties with rails. A 14 x 16 ingot would give more good rails than a 22 x 24 ingot. He had found that of rails taken up on account of early failure segregation was the chief trouble. Phosphorus was often found to be three times as much at the junction of the head with the web as just under the head in the middle of the rail.

As further reason for providing for a test piece from every fifth blow rather than every blow Messrs. Campbell and Carhart called attention to the large tonnage of rails now rolled for trolley lines which do not call for the rigid specifications insisted on by steam roads. The specification of the American Society for Testing Materials, it was argued, should be one meeting the general demands of commerce and not the most rigid that could be invented. The fact that each railroad had its own specification made refinements in a general specification unnecessary.

A motion finally prevailed to refer back to Committee A its amendment providing for a rail test piece from every fifth blow, with a request for the reasons for the change. Its amendments retaining the original hights of drop and making obligatory the taking of the test piece from the top of the ingot were adopted. The committee had requested further time on section 4 of the Maintenance of Way Association's specifications in order to investigate the conditions at the different mills affecting the question of shrinkage. It is expected that data will be presented at the committee's fall meeting.

Further consideration of the specifications for iron and steel was postponed to Saturday morning.

Tests of Structural Steel.

Mansfield Merriman offered a resolution, which was adopted, recommending the appointment of a committee to formulate a plan for such scientific tests on structural steel as seem likely to be of value to the engineering profession.

A. W. Dow, inspector of asphalts and cements for the District of Columbia, offered a resolution, which was adopted, recommending that the Executive Committee appoint a Committee on Water Proofing.

FIFTH SESSION.

The consideration of the report of Committee A on Standard Specifications for Iron and Steel was resumed at the session of Saturday morning, the fourth series of specifications, those for steel castings, being taken up. The committee of the American Society of Mechanical Engineers had recommended some changes in the original specifications of the American Society for Testing Materials. The first of these was a change in the tensile strength of soft, medium and hard castings from specified minimum values of 60,000, 70,000 and 85,000 pounds per square inch to 60,000, 70,000 and 80,000 pounds, respectively, with allowable variations of 5000 pounds above and below these values. The second change proposed by the committee of the American Society of Mechanical Engineers was that the 8-inch specimen be made the standard and the 2-inch specimen be used only when it is inconvenient to use the 8-inch one; also that an increase in elongation of 25 per cent. be required for the former. The committee recommended that these changes be not accepted. In the case of the first the committee said that there was no good reason for prescribing an upper limit of strength. Concerning the second the committee was of opinion that the additional cost of preparing 8-inch specimens is unwarranted. The only change recommended in the original specifications was in clause 1, the proviso "Castings to be annealed or unannealed as specified" being changed to "Castings to be annealed unless otherwise specified."

The recommendations of the committee as above were affirmed and the specifications for steel castings were ordered submitted to a letter ballot.

Steel Axles and Steel Forgings.

Specifications V, steel axles, and specifications VI, steel forgings, were next considered. Four changes had been recommended by the Committee of the American Society of Mechanical Engineers, as follows: 1. That nickel steel forgings and oil tempered forgings be not included in this specification, because the present state of the art does not warrant general specifications being drawn for these materials. 2. That for soft or low carbon steel forgings the chemical requirements be not over 0.06 phosphorus and 0.05 sulphur instead of 0.10 phosphorus and 0.10 carbon. 3. That for "carbon steel not annealed" the term "medium steel" be used and that the sulphur be reduced from 0.06 to 0.05 per cent. 4. That wherever it is desirable that the elastic limit be determined an extensometer be used and the elastic limit be taken as "that point at which the elongation in 8 inches per 1000 pounds of added stress per square inch first exceeds four ten-thousandths of an inch."

The committee's recommendations on these proposed changes were, respectively: 1. Not accepted, because of the large use of such forgings. 2. Not approved, because of the large use of this grade of forgings, a use that might be curtailed if all material was made more expensive, as proposed. 3. It was thought inadvisable to make this change. 4. Not accepted, because it was considered commercially impracticable.

The committee recommended also the adoption of specifications for locomotive axles and forgings compromising the differences between the present specifications and those of the American Railway Master Mechanics' Association. The proposed requirements are: Phosphorus, 0.05; sulphur, 0.05; manganese, 0.60; tensile strength, 80,000 pounds; elongation, 20 per cent.; reduction of area, 25 per cent.

All of the recommendations of the committee as above were approved and the two specifications ordered submitted to letter ballot.

Specifications for Stay Bolts.

H. V. Wille, chairman of the Committee on Standard Specifications for Stay Bolts, submitted its report, presenting tentative specifications. The new features were that the method of manufacture is specified and that a vibration test is called for. The process of manufacture is specified as follows: "All iron stay bolts must be hammered or rolled from a bloom or pile having a minimum cross sectional area of 45 square inches and about 18 inches long. The pile must be made up of a central core composed of bars of from ½ to 1 inch square and be covered on all four sides with an envelope ⅝ inch thick. This pile must be rolled to a billet, allowed to cool, again heated and then rolled into bars of the required dimensions." The vibration test required is a minimum of 6000 revolutions under the following conditions: "A threaded specimen fixed at one end has the other end moved in a circular path while stressed with a tensile load of 4000 pounds. The circle described should have a radius of 3-32 inch at a point 8 inches from the end of the specimen."

In the discussion following the presentation of the report Mr. Wickhorst said that he had found that piling iron in testing stands more vibration than bloom iron, but if both had like heat treatment it was a question if such a difference would be shown. He objected to specifying a method of manufacture and thought the vibration test alone should be the criterion.

Mr. Kinkead had found that tests in the vibration testing machine gave quite divergent results. He would get 200 to 600 vibrations on test pieces from the same bar. Tension tests can be checked within a small percentage, but there was yet to be devised a vibratory testing machine that would give results checking closely.

The recommendations of the committee were affirmed and the specification ordered submitted to a letter ballot. In connection with the report of this committee Mr. Wille presented a paper on "The Influence of Methods of Piling Stay Bolt Iron on Vibratory Tests."

Tests of Steel Under Combined Stresses.

W. K. Hatt read a paper by E. L. Hancock of Purdee University entitled "A Preliminary Report of Tests of Nickel Steel and Carbon Steel Under Combined Stresses." These tests were of steel bars in tension while under torsion. A specimen held at one-third its elastic limit in torsion was tested in tension to its elastic limit. A specimen held at two-thirds its elastic limit in torsion was tested in tension to the elastic limit. A specimen held at its elastic limit in torsion was tested in tension to the elastic limit. The elastic limit in tension in the three cases was lowered for nickel steel 7 , 21 and 63 per cent., respectively, due to the load in torsion. For carbon steel the lowering of the elastic limit was 6, 30 and 54 per cent., respectively, due to the load in torsion. The specimens while being tested in torsion were held in tension under a load of 4000 pounds per square inch.

Mr. Colby, referring to the suggestion of the writer of the paper that when all the torsion and tension tests have been completed the validity of formulæ used in designing members subjected to combined stresses be tested, and if not found true that they be displaced, thought that the investigation should go much farther before any change in formulæ covering strain of structural materials should be made. He hoped to present at the next meeting elaborate tests on nickel steels and carbon steels. These would involve nickel steel of varying percentages of nickel.

Specifications for Cast Iron.

A printed report was presented by Committee B, on Standard Specifications for Cast Iron and Finished Castings, Walter Wood, chairman. Specifications were submitted for car wheels and gray iron castings and on motion were approved and ordered submitted to a letter ballot. The only change suggested by the meeting was that the committee provide a range in the speed of testing gray iron test bars.

Dr. Richard Moldenke, secretary of the American Foundrymen's Association, read a paper on "A Comparison of Standard Methods of Testing Cast Iron," reviewing the practice in the United States and in Europe.

Trouble with Hard Iron.

A brief paper on "Hard Cast Iron: the Theory of One of Its Causes" was read as prepared by Henry Louther of Hartford, Conn. The writer detailed cases in which complaints of mysterious trouble with hard iron had been investigated. One case occurred on a multiple drill where several sizes of standard drills were used and several thicknesses of metal were involved. Small drills stood up with this iron as well as larger

ones, but the latter, ½ to ¾ inch, were dulling as though the iron were charged with emery. The chemical results were normal except manganese, the analysis showing silicon, 2.50; phosphorus, 0.70; sulphur, 0.08; total carbon, 3.50; manganese, 0.16. Steps were taken to raise the manganese to about 0.50, and the trouble with hard iron disappeared. The writer thought that some carbide of iron or carbide of silicon forms in the absence of a reasonable amount of manganese.

Dr. Dudley observed that the trouble might have been due to "our old enemy oxygen."

A series of lantern slides were shown by E. Stuetz in illustrating his paper on "The Thermite Process in American Practice."

A paper by Hambden Buel, chemist of the Central Iron & Coal Company, Tuscaloosa, Ala., was read by title, "Some Laboratory Records on Pig Iron." The president of the company, Joseph Lodge, spoke briefly, explaining its method of grading iron, which presented some departures from usual practice.

SIXTH SESSION.

At the final session, Saturday afternoon, Henry J. Hartley of the boiler department of the Wm. Cramp & Sons Ship & Engine Building Company read the report prepared by Col. E. D. Meier, New York, chairman of Committee R, on Boilers. It detailed the efforts made in the past year to secure the amendment of existing boiler legislation in the United States, the hearings before the Secretary of Commerce and Labor looking to changes in rules governing the steamboat inspection service, the preparation of the Cortelyou bill, which failed in the last Congress, &c.

On motion the Executive Committee of the society was instructed to take action approving the movement for the revision of existing laws relating to boilers for steam vessels.

A resolution was passed referring to the Executive Committee the question of appointing a Committee on Tempering and Testing of Steel Springs.

The last paper of the session was by Robert A. Cummings, describing and illustrating by lantern slides a "Large Hydraulic Testing Machine for Uniform Loads." The machine was designed by Mr. Cummings for testing shearing stresses in reinforced concrete beams.

Cast Iron Car Wheels.

At the recent convention of the Master Car Builders' Association progress was reported by the Committee on Guarantee for Cast Iron Wheels, the effort being to get the users and makers of wheels together in a general form of guarantee. The subject was referred to a standing committee on cast iron wheels, to consider the complete contour of wheels, and especially the possibility of increasing thickness of flanges. Concerning the durability of cast iron wheels under the new conditions it was reported that the new M. C. B. wheels had not been in service long enough to establish conclusions, but those which had been in use had given a good account of themselves. It was stated that many railroad officers doubted the advisability of using cast iron wheels at all under 100,000-pound capacity cars. Tests were quoted showing pressures required to break off flanges of wheels. Stresses to which flanges of wheels are subjected were believed to constitute an important field for investigation by the association. The suggestion of the cast iron car wheel manufacturers is that the time specified in the guarantee be reduced as the car capacity increases. The present guarantee was based on wheels for 30-ton cars and the time four to six years. It is now proposed that 33-inch wheels for 40-ton cars shall have a guaranteed life of three to four years and for 50-ton cars two to three years. The cast iron car wheel for 30-ton cars weighs 600 pounds and those now made for 50-ton cars weigh 650 to 700 pounds. While it has been possible to increase the thickness of the plates and the tread of cast wheels, no attempt has been made to increase the size of the flange, as that is now limited by track conditions, though it is thought possible to add ⅛ inch to the thickness without any serious effect.

The Production of Iron Ore in 1904.

WASHINGTON, D. C., July 3, 1905.—The active iron ore mines in 25 States and Territories in the year ending December 31, 1904, produced 27,644,330 gross tons of iron ore, according to the annual report of the United States Geological Survey, which has just been completed by John Birkinbine. Compared with the output for 1903, which was 35,019,308 tons, this was a decrease of 7,374,978 tons, or 21 per cent. From 1895 to 1902 the production showed increases every year, reaching a maximum of 35,554,135 tons in 1902. The years 1902 and 1903 represented phenomenal outputs.

Apparent Consumption.

The following table shows the apparent consumption of iron ore in the United States for all purposes in 1903 and 1904:

	1903. Gross tons.	1904. Gross tons.
Domestic ore produced	35,019,308	27,644,330
Stock at mines	6,297,888	4,666,931
Imports	980,440	487,613
Exports	80,611	213,865
Stock at lower lake ports December 1	6,371,085	5,763,399
Zinc residuum	73,264	68,189
Apparent consumption	34,232,399	30,224,910

A considerable portion of the consumption does not occur in the year in which the ore is mined. The reserve stocks of ore at the opening and closing of the year at blast furnaces or at ports which receive the bulk of iron ore mined or at the mines, together with the imports and exports, should be considered in forming comparisons of annual records.

Relation of Ore to Pig Iron Production.

Using similar factors, the above table of apparent consumption was prepared to show the apparent available supply of ore and in connection with the next table the relation this supply bore to the production of pig iron. There are, however, some items wanting which are necessary to form a correct comparison. Among these are the stocks of ore on hand at blast furnaces. On May 1, 1904, it was stated that the reserves of Lake Superior ores alone at blast furnaces amounted to about 7,000,000 tons; but these stocks are constantly varying, as are the mill cinder, scrap, roll scale and other materials charged into the blast furnaces (amounting in the census year 1900 to 1,600,313 gross tons), the quantity of iron ore used in open hearth furnaces, as a fix in puddling and in other furnaces, as a flux in the silver smelters, in the manufacture of paint, &c.

The apparent consumption shows less variation than the reported production and more truly represents the conditions prevailing in the iron ore trade, while the reported production shows the mining activity in each year.

The following table indicates the quantities of domestic iron ore mined and of pig iron produced in the United States for ten years:

Year.	Iron ore mined. Gross tons.	Pig iron produced. Gross tons.	Year.	Iron ore mined. Gross tons.	Pig iron produced. Gross tons.
1895	15,957,614	9,446,307	1900	27,553,161	13,789,242
1896	16,005,449	8,623,127	1901	28,887,479	15,878,354
1897	17,518,046	9,652,680	1902	35,554,135	17,821,307
1898	19,433,716	11,773,934	1903	35,019,308	18,009,252
1899	24,683,173	13,620,703	1904	27,644,330	16,497,033

Varieties of Ore.

The quantity of red hematite mined in the year 1904 was 23,839,477 gross tons, or 86 per cent. of the total. Over one-half was obtained from Minnesota, approximately one-third from Michigan, with Alabama, Wisconsin and Tennessee following in order of rank. The output of brown hematite was 2,146,795 tons, of which, as in the previous year, Alabama was the principal contributor, followed by Virginia and West Virginia and Georgia.

The magnetite class of ores showed an increase in 1904, rising to 1,638,846 gross tons, or 63,424 tons more than in 1903. This is due principally to the increased activity in the Lake Champlain district of New York, which State headed the list for this class of ore, followed by New Jersey and Pennsylvania.

The 1903 output of 34,833 gross tons of carbonate ore showed a decline to 19,212 tons in 1904.

The production of concentrated ore in the United States in 1904 was 370,118 gross tons, most of which was magnetically separated. There were also made 68,189 tons of residuum, a by-product from smelting zinc ores, available for use in the manufacture of spiegeleisen.

The Lake Superior Region.

The most prominent iron ore producing district in the world comprises the five ranges located near the shores of Lake Superior in the States of Minnesota, Michigan and Wisconsin, the bulk of the iron ore mined being brought to the shipping ports on Lakes Superior and Michigan to be forwarded to consuming centers in Pennsylvania, Ohio, Illinois, New York, West Virginia, Virginia, &c. In 1900 the Michipicoten range was opened in the Province of Ontario, Canada, but its production is comparatively small, the quantity mined in 1904 being 95,887 gross tons and the total output since its opening 911,039 tons. In the following statistics of the Lake Superior region the data given relate only to the United States, the Michipicoten range being omitted. The total production of the region in 1904 was 20,198,311 gross tons, a decrease from the 1903 total of 6,374,960 tons, or 24 per cent. Of this production the Mesaba range contributed 11,672,405 tons, or 57.8 per cent.; the Menominee range 2,871,130 tons, or 14.2 per cent.; the Marquette range 2,465,448 tons, or 12.2 per cent.; the Gogebic range 2,132,898 tons, or 10.6 per cent., and the Vermilion range 1,056,430 tons, or 5.2 per cent. The figures of reported shipments from these ranges in 1904 are in excess of those given as production, due to the stocks of iron ore on hand at the mines at the beginning of the shipping season.

Production by States.

The review of the industry by States in 1904 is of unusual interest, especially in view of the prospecting work that has been done to add to the reserves of ore.

Minnesota.—All the iron ore mined in 1904 in this State, 12,728,835 gross tons, was of the red hematite variety, although some hydrated ores are known locally as brown hematites. This output shows a decline of 2,642,561 tons, or 17 per cent., from the 1903 figures of 15,371,396 tons. The shipments reported in 1904 are, however, greater than the production above named, due to the stocks of ore at the mines being reduced. This is the first year in which there has been a decline in the quantity of ore mined in Minnesota since the initial shipment in the year 1884. Much has been said in regard to the early exhaustion of the iron ore supply of the Lake Superior district, but in Minnesota alone, on the Mesaba range, there are reported to be known and explored reserves approximating 500,000,000 tons, practically twice the total shipments from all the ranges of the Lake Superior regions since 1854. There are also other hematite deposits not so rich in iron which may in time be utilized, and in some sections important deposits of magnetites are reported.

Michigan.—In 1904 Michigan ranked second as a producer of iron ore, with a total of 7,089,887 gross tons, a decrease from the 1903 product (10,600,330 tons) of 3,510,443 tons, or 33 per cent. All of the ore was of the red hematite class. Notwithstanding the fact that for forty years iron ore exploitation has been actively followed in the upper Michigan peninsula new finds are reported, and developments made of mining properties which had been considered exhausted indicate additional ore reserves.

Alabama.—In 1904 this State contributed three varieties of ore, 2,894,423 gross tons being red hematite, 787,514 tons brown hematite and 17,944 tons magnetite. The total production of all classes, 3,699,881 tons, is an increase of 14,921 tons over the 1903 output.

New York.—Activity in the Port Henry (Lake Champlain) district in 1904 is chiefly responsible for advancing the State to fourth position, with a production of 842,303 gross tons of iron ore, of which 788,974 tons were magnetite and 53,329 tons red hematite. The increase over the 1903 total was 301,843 tons, or 56 per cent. Cargoes of rich ore which, owing to the phosphorus and silica contents, were particularly desirable for the manufacture of basic pig were exported to Germany. Additional exploitations and the known reserves of ore suggest that the State of New York may regain and maintain her former position of prominence as a producer of iron ores.

Virginia and West Virginia.—In 1904 these two States, considered jointly in order to preserve the confidential character of reports, mined 550,253 gross tons of iron ore, a falling off of 250,908 tons, or 31 per cent., from the 1903 record. The greater part of the output was brown hematite. Small quantities of red hematite and magnetite were also obtained.

Tennessee.—The quantity of iron ore mined in the year 1904 was 500,982 gross tons, of which 309,419 tons were red hematite and 191,563 tons brown hematite. The total for the State showed a decline of 351,722 tons, or 41 per cent., from the 1903 production of 852,704 tons.

New Jersey.—The 499,949 gross tons of iron ore mined in New Jersey in 1904 was all of the magnetite variety. This is an increase of 15,153 tons, or 3 per cent., over the 1903 total of 484,796 tons. Some of the older mines, where operations had been suspended for several years, are now wrought to supply the demand caused by the erection of modern blast furnaces, and at some of the mines magnetic cobbing and concentration are being followed.

Wisconsin.—The production of iron ore in Wisconsin in the year 1904 was 483,475 gross tons, of which 467,475 tons were red hematite and 16,000 tons brown hematite. This was a decline of 191,578 tons, or 28 per cent., from the 1903 total of 675,053 tons.

Pennsylvania.—In late years this State has shown a constant decrease in iron ore mining activity, due principally to moderate outputs from the Cornwall ore hills, and in 1904 the quantity supplied was but 397,107 gross tons, as compared with 644,599 tons in 1903, a difference of 247,492 tons, or 38 per cent. Of the 1904 total 227,615 tons were magnetite, 164,206 tons brown hematite and 5286 tons red hematite.

Of the remaining States none contributed over 300,000 tons of iron ore in 1904.

Leading Iron Ore Mines.

In 1904 there were 117 iron ore operations which produced over 50,000 gross tons each, this total being 24,993,414 tons, or 90 per cent. of the United States output. In 1903 the number of larger mining operations was 141, producing 89 per cent. of the total. In 1904, of these larger mining operations, 1 reported over 1,500,000 gross tons, 2 over 1,100,000 tons, 1 over 1,000,000 tons, 1 over 900,000 tons, 1 over 800,000 tons, 1 over 700,000 tons, 2 over 600,000 tons, 1 over 500,000 tons, 5 over 400,000 tons, 3 over 300,000 tons, 6 over 250,000 tons, 11 over 200,000 tons, 9 over 150,000 tons, 27 over 100,000 tons and 46 over 50,000 tons.

Of these large mining operations 41 were in Minnesota, 36 in Michigan, 20 in Alabama, 4 in New York, 3 each in New Jersey, Wisconsin and Tennessee; 2 in Virginia, and 1 each in Colorado, Georgia, North Carolina, Pennsylvania and Wyoming.

Value of Ores.

The total value at the mines of the 27,644,330 tons of iron ore produced in the United States in the year 1904 was $43,186,741, or $1.56 per ton, a decrease of 33 cents, or 17 per cent., from the 1903 average figures of $1.89 per ton.

The Lake Superior Ore Association, which for a number of years has fixed the price of Lake Superior iron ores, was practically dissolved in 1904, except for statistical purposes, and no fixed basis price was agreed upon at lower lake ports. The average, however, delivered at lower lake ports was about $3.25 for Bessemer old range ore, $2.85 for non-Bessemer old range ore, $3 for Mesaba Bessemer ore, and $2.75 for Mesaba non-Bessemer ore.

The data collected show that the highest value placed on ore at the mine was $3.04 in Connecticut and Massachusetts, where brown hematites are exploited on a moderate scale, and the lowest $1 per ton, in Kentucky. In the States comprising the Lake Superior region the average price per ton at the mines was: In Michigan, $1.97; in Wisconsin, $1.77, and in Minnesota, $1.43; these were differences of 43 cents, 52 cents and 32 cents less per ton from the average 1903 figures of $2.40, $2.29 and $1.75 per ton.

W. L. C.

Trade Publications.

Electrical Installations.—National Electric Company, Milwaukee, Wis. Publication No. 66; illustrated; entitled "Plants and Types." Shows a few installations and views of electrical apparatus to give a general idea of the company's product. Vol. I, No. 3, of the "Electrical Catechism" has also been issued. It covers electrical measuring instruments.

Steel Shafting.—Columbia Bridge Company, Pittsburgh, Pa. Booklet. Contains standard price-list of turned and cold die rolled and polished steel shafting, piston rods, &c.; price-lists of cold drawn steel hexagons, squares, flats, &c., and useful information, including tables of weights of flat rolled steel per linear foot; decimals of an inch for each 1-64th; table of standard wire gauges, thickness and weight of sheet iron and steel, weights of square and round steel hot rolled bars, and general information such as how to remove rust, restore overheated steel and make various calculations.

Forged Steel Flanges.—American Forged Steel Flange Company, 64 Wabash avenue, Chicago, Ill. Circular and card. The first contains a brief description of forged steel flanges for high pressure work and dimension tables and price-lists of extra heavy standard forged steel flanges for steam pressures up to 250 pounds per square inch, and extra heavy forged steel flanges with high hub. "Facts About Steel Boiler Flanges" is the title of the card.

Sensitive Drills and Tapping Machines.—The Burke Machinery Company, Cleveland, Ohio. Illustrated catalogue and circular. The first shows the No. 0 sensitive drill for light rapid drilling up to 5-16 inch holes, which is especially adapted for the use of manufacturers of electrical and mathematical instruments. Columns are furnished for these drills. The No. 1 tapping machine with positive drive, the No. 1½ tapping machine with friction drive and the No. 2 tapping machine with positive drive are also shown, and columns are furnished for these machines. An illustration is given of the Eureka upper marking machine for shoe manufacturers. The circular shows the construction of bench milling machines Nos. 1 and 2. Also contains a brief description and view of the No. 1 coal oil shop forge.

Coal Handling Machinery.—C. W. Hunt Company, West New Brighton, Staten Island, N. Y. Illustrated catalogue No. 655; size, 6½ x 8¾ inches; pages, 56. Contains views and description of steeple towers, parabolic boom tower for handling steam shovels, coal hoisting elevator, mast and gaff fittings, Hunt steam shovel, coal cracker, steel coal tubs, contractors' tubs, cable railways, automatic railways, trolleys, Hunt noiseless conveyor for bulk materials, steam and electric hoisting engines, scales and weighing hoppers, Hunt scales, coal dealers' screens, Hunt easy closing coal valves, round and square simplex cut off valves, duplex cut off valves, broken stone valves, single flap valve, sheet steel valves, "Army" wall chutes, Stivers' retreating valve, locomotive coaling chutes, coal storage buildings, hoisting blocks, blocks for wire rope or chain, &c.

Calendar.—The Ætna Foundry & Machine Company, Springfield, Ill. An attractive standing desk calendar for 1905.

Chucks.—Cushman Chuck Company, Hartford, Conn. Illustrated catalogue; size, 6 x 9 inches; pages, 48. Contains description and dimension of styles Nos. 10 and 12 four-jaw chucks, styles 18 and 19 reversible face plate jaws, universal geared scroll chucks, geared scroll chucks, styles 31 and 41, 32 and 42, 34 and 44; geared scroll chucks with hubs for taper arbor, universal lever scroll chucks, two-jaw chucks for brass workers and general machine work, universal two-jaw chucks, styles 21, 22, 23, 24, 25 and 26; two-jaw chucks, style 29; drill chucks, special chucks for cutting off machine, drill chuck arbors and a bench centering chuck. A circular letter describing new goods accompanies the catalogue.

Power Pumps.—Goulds Mfg. Company, Seneca Falls, N. Y. Pamphlet. Subject, "Let's Think About Pumps." Refers to the advantages and efficiency of the Goulds triplex power pump and different ways of driving it. In addition to triplex pumps this company makes rotary pumps, centrifugal pumps, electric pumps and deep well working heads.

Multi-Speed Electric Motors.—Northern Electrical Mfg. Company, Madison, Wis. Bulletin No. 5. Contains a description, with illustrations, of the Northern multi-speed motor, particularly intended for old belt driven machine tools, to make them capable of more and better work. It consists of a change gear box in combination with a Northern variable speed motor. Where the motor in itself has a 3 to 1 variation speed winding the multi-speed motor is capable of a 9 to 1 variation; with a 4 to 1 variable speed winding a 12 to 1 variation is obtained, and with a 5 to 1 winding a 15 to 1 variation. This motor was described in *The Iron Age* February 9, 1905, with special reference to its application on an old 24-inch engine lathe.

Back Geared Motors.—Northern Electrical Mfg. Company, Madison, Wis. Bulletin No. 44. Illustrates representative applications of back geared motors in industrial plant service.

Electric Line Material.—Newhall Chain, Forge & Iron Company, 9 Murray street, New York City. Illustrated catalogue No. 99. Shows a stock of telephone, telegraph, electric light and street railway line materials, including cross arm braces, guy clamps, pole steps, bolts, turnbuckles, expansion bolts, &c.

Electric Motors.—National Electric Company, Milwaukee, Wis. Bulletin No. 400. Describes the new Lundell universal motors, with laminated frames, illustrated in *The Iron Age* February 9, 1905.

Lathes.—Seneca Falls Mfg. Company, Seneca Falls, N. Y. Illustrated catalogue No. 20B. Contains descriptions and specifications of a line of foot and power Star screw cutting engine lathes, Star speed lathes and Star wood turning lathes, with their attachments and accessories. The first, in 9 and 11-inch sizes, are made either for foot or power drive, and the 12, 14 and 16 inch sizes are made for power drive only. Speed lathes are made in 10 and 12 inch sizes and the wood turning lathes in 12-inch size. The other features shown include rests of plain, compound and rise and fall patterns; countershafts, milling and gear cutting attachments, dogs, arbors, lathe tools, chucks, &c.

Wood Working Machinery.—Seneca Falls Mfg. Company, Seneca Falls, N. Y. Catalogue No. 19A. Confined to foot, hand and light power wood working machinery, such as combination self feed rip and cross cut saws for foot and hand power and for power only, boring and scroll saw attachments, scroll saws for foot or steam power and for foot power alone, band saws, molders, molding cutters, mortisers, &c.

Electric Motors.—Crocker-Wheeler Company, Ampere, N. J. Bulletin No. 51, superseding bulletin No. 48. Pertains to small belted machines of the form F type and illustrates their application to the drive of various kinds of machinery.

Sulphate of Iron.—American Steel & Iron Company, Chicago, Ill. Booklet. Subject, "Sulphate of Iron in Agriculture and a Partial Bibliograph." Compiled by W. E. Horton and issued in the interests of those who wish to investigate the uses of sulphate of iron on the farm.

Lathes.—Gisholt Machine Company, Madison, Wis. Loose leaf; pages 25 and 26. Give illustrations of an early type of Gisholt lathe and one of the latest types of turret lathes, to show by contrast the improvements which have been made in construction.

Clutches.—Double-Friction Coil Clutch Company, Chicago, Ill. Pamphlet. Contains a detailed description of the double-friction coil clutch as illustrated in *The Iron Age* May 4, 1905. The advantages of the clutch and its adaptability to miscellaneous work are emphasized.

Water Softening.—American Water Softener Company, Mutual Life Building, Philadelphia, Pa. Pamphlet. Deals with the Brünn-Lowener system for softening water. The disadvantage of hard water and the benefits of soft water are explained in the introduction, followed by a description of the Brünn-Lowener system, methods of operating, the company's laboratory, and illustrations of installations that have been made.

Valves.—D. T. Williams Valve Company, 904 Broadway, Cincinnati, Ohio. Pamphlet. Shows the new line of Williams regrinding globe valves and horizontal, angle, cross and check valves.

Drills and Grinders.—Hisey-Wolf Machine Company, Cincinnati, Ohio. Catalogue No. 5. Illustrates a number of portable electrically driven hand drills and grinders for direct current. Special bulletin is issued for alternating current. Tools included are grinders for mounting on lathes for center grinding; milling cutter and internal grinders for mounting on milling machines, for surface and other grinding. A special internal grinder is illustrated, known as the type D. & E., which was described in *The Iron Age* April 20, 1905. Other tools shown are hand manipulated surface grinders, buffers, drills and small electrically driven aerial drills.

Inspirators and Steam Apparatus.—Hancock Inspirator Company, 85 Liberty street, New York City. Cloth bound catalogue; size, 9 x 12 inches; pages, 111. Illustrates the entire line of goods manufactured by this concern, including a complete line of locomotive inspirators, stationary inspirators and locomotive trimmings, such as steam valves, check valves, hose strainers, blow off valves, whistles, cylinder cocks, guide oil cups, &c. A general description is given of the Hancock inspirator, Types A, B and D are shown, with tables of capacity, sizes and prices, and a section showing the parts by numbers, with directions for maintaining and repairing. Types E and F are next shown, both in exterior and sectional views, with directions for maintaining and repairing. The composite type inspirator is similarly treated. All of the foregoing are shown with particular reference to their use on locomotives. A description of types A and C and stationary inspirators follow, these being intended for stationary, marine and portable boilers. The next division of the catalogue contains a description of the Hancock boiler washer and ejector, or jet pump. The remainder of the catalogue is devoted to valves, including main steam valves, check valves in horizontal and vertical patterns, double check valves, double vertical check valves with double stop valves, Hancock quadruple blow off valves, swing line check valves and globe and angle valves of the type illustrated in *The Iron Age* January 5, 1905.

THE IRON AGE

1855—1905.

New York, Thursday, July 6, 1905.

DAVID WILLIAMS COMPANY, - - - - - - - PUBLISHER
CHARLES KIRCHHOFF, - - - - - - - - } EDITORS
GEO. W. COPE, - - - - - - - - - }
A. I. FINDLEY, - - - - - - - - -
RICHARD R. WILLIAMS, - - - - - - - - - HARDWARE EDITOR

The International Steel Rail Pool.

For some time it has been known in trade circles that the leading steel rail manufacturers in this country and Europe have been working together quite closely. The past week some details of the arrangement have been published on European authority. It is stated that the American manufacturers have been given the steel rail trade of the American continent and that the European manufacturers are to be free from American competition in all other parts of the world except South Africa. The English and French works have the prior right of furnishing rails to their colonies, while the German works are to have prior rights in Norway, Sweden and Denmark. Other international trade is divided among English, German, Belgian and French works.

Accepting this announcement as true, several interesting points suggest themselves: First in importance from the American standpoint is the removal of European competition for steel rail orders in this country, even if the duty should be reduced or completely wiped out. Next is the very strong probability that the countries producing no rails will have to pay much higher prices than under the old *régime* of unrestrained competition for their rail business. Third is the possibility that if such a pool proves satisfactory in actual practice a similar arrangement may be made in several other branches of the steel trade.

It does not necessarily follow that the elimination of foreign competition for rail orders in this country would insure under all circumstances the maintenance of the present price for steel rails, or anywhere near it. Those who thus interpret the formation of an international pool do not take into consideration all the conditions existing in the American steel trade. The price of rails, it is true, has so long been held at $28 at mill that this rate seems unalterably fixed. It stands despite the assertion that no agreement now exists among the American rail makers relative to domestic business. But there were special reasons why this price could be held steadily for so long a time and there are special reasons now why it is not being cut. Meanwhile, however, the rail producing capacity of the country has been materially increasing, new factors have come into the field and in another year such important new conditions will prevail that it will probably surprise the rail manufacturers themselves if they prove to be able to keep the price near its present level. Much will, of course, depend upon the general demand for iron and steel. If the consumption of iron and steel should continue at the rate reached for the half year just ended the rail manufacturers would probably find no difficulty in maintaining the price of rails. If, however, a shrinkage in general trade should occur rail tonnage would become very desirable for mills able to make either rails or billets, and unrestricted competition for such business would have its natural result.

The enhancement of the price of rails to buyers in nonrailmaking countries, even though done by agreement among the makers in other countries and not as the result of natural trade conditions, is not reprehensible. In fact, it is rather to be commended. That buyers of any commodity in a nonproducing country should have their wants supplied at a cheaper rate than buyers in the producing country is a flat absurdity as well as a contravention of the natural laws of trade. Yet this special privilege of cheapness has for years been enjoyed by buyers of steel products in markets open to international competition. To secure trade in such markets the steel makers have often sacrificed all their profits on the tonnage sold and at times have even paid for the opportunity of doing it. If hereafter the rail buyer in South America, South Africa or Arabia should be compelled to pay the going price at the American or European mill, plus freight to destination, he will not be treated unfairly, but will simply be placed on the same plane as the domestic buyer. Favoring the distant consumer with prices which represent cost or below it is a development of modern trade which should be curbed rather than cultivated.

The Automobile Industry.

Many of the manufacturers of automobiles have found that they underestimated when they made their plans for the summer of 1905, and the result is that their factories are rushed with orders at a time when the between seasons condition would ordinarily be affording a vacation for many of their employees. Practically the same situation is found among the greatly diversified industries which manufacture the accessories of the automobile. This is especially important in its promise for the future.

In making plans for next season's market the automobile manufacturer must provide for a still larger demand. Such, at least, is the general belief. This means larger capacity as a rule. More machine equipment will have to be bought not only in the standard tools but in the special tools which are now obtainable for decreasing the cost and increasing the accuracy of the various parts of the mechanism and running gear. Few persons outside of the business realize to what extent automobile building is now specialized in its machine equipment. These increased demands should prove a material factor in the volume of the country's machine tool business in addition to the very large buying of the automobile companies during the past six or eight months. It will also be an important factor in many other metal lines which produce the almost countless necessities and luxuries that go to make up the equipment of the automobile enthusiast. Oftentimes such a man puts nearly if not quite as much money into the accessories as he does into the machine itself. These other manufacturers must also buy tools and materials in order to meet the increasing demand, for there is not the slightest doubt that the demand is increasing and rapidly. Possibly a reaction may follow, though few believe it. At any rate it will not be next year nor the year after, and probably not for years to come. The automobile is now as much of a fixture as the driving horse, and for business purposes its use must of necessity increase as the motor truck and delivery wagon are perfected to a point of economy and reliability, and this perfection is nearing fulfillment, if it has not already arrived.

In addition to the well established and thoroughly substantial companies now building automobiles, and others who are preparing with the expenditure of large sums of money to manufacture for next year's market, a large number of new companies exist more or less on paper. Some of these are financially all right and have

thoroughly tested high-class machines to build. Out of a total of many millions of authorized capital stock of these new companies a considerable aggregate will turn into cash for new buildings and equipment. Many of the projected companies, however, will never do business. Others will live a hand to mouth existence for a little while and then disappear. It would be well for those who would do business with the new automobile companies to take into careful account in the matter of credits the fact that the high tide of the motor vehicle as a speculative venture is about due and that the professional promoter is keenly awake to the situation.

Record Contracts for Iron and Steel.

The announcement in these columns last week that the Pittsburgh Steel Company had bought 1,000,000 tons of steel billets from the United States Steel Corporation, deliveries extending over five years, probably recorded the largest transaction in steel in the history of the trade. The purchasing company has bought a six months' supply of steel on several occasions, each of the contracts amounting roundly to 100,000 tons. These were at a fixed price or involved in part the conversion of pig iron, but the million-ton contract is undertood to be on a sliding scale, with the market price of Bessemer pig iron as the basis. The transaction is interesting both by comparison with other large purchases of iron and steel and as accenting the tendency toward long time contracts.

Perhaps the largest previous transaction in semi-finished steel was that made between the Carnegie Steel Company, Limited, and the American Tin Plate Company for sheet bars. The tonnage was 625,000, or 125,000 tons a year for five years from July 1, 1899, the price of bars to be $15.75 with pig iron at $10. An arrangement involving a somewhat less tonnage was in force in the Birmingham district for two or three years, calling for the delivery of 4 x 4 inch open hearth billets to a nearby rod mill.

Contracts of this character are usually between a producer of iron or steel and a producer of a more finished form, or between a producer of raw material and a blast furnace or steel works company. Sliding scale deals in finished material between producer and consumer are not so common, though they promise to be increasingly frequent. In recent years a 50,000-ton purchase of bars and other finished forms by one of the large manufacturers of agricultural machinery had been regarded as of record size until the Carnegie Steel Company, Limited, took the contract in 1900 for 70,000 tons of steel for the New York Subway. Two months ago a large consumer of bars, plates and shapes, the latter entering into the construction of steel cars, is understood to have made heavy purchases, contracting with prominent producers for deliveries extending over five years. The well known contract with the leading interest for plates for steel cars, the original agreement calling for deliveries up to 30,000 tons a month, is probably the largest ever made for mill products. In the last year of the Carnegie Steel Company, Limited, it had also under negotiation a sale of plates to the National Transit Company, with deliveries over a term of years, at $23 a net ton, with pig iron at $10. It is to be expected, since an agreement exists between the leading steel companies as to the price of billets, that pig iron, with its open market, will be the natural base in such agreements.

Long term contracts for finished material appeal on the one hand to a large consumer, requiring the assurance of prompt and regular delivery and desiring to avoid the fluctuations in prices that come with unusual pressure on the mills, when finished material advances much more rapidly than pig iron. On the other hand, only a large producer, with a vast array of finishing mills to be kept at work, would care to entertain such propositions. The point has not yet been reached when the buyer feels the same obligation to take the material that is upon the mill to furnish it. And the history of these big contracts is that the mill is often compelled to refuse attractive business at good prices because of the large tonnage of low priced material it is bound to deliver. As is the case to-day, the smaller plate and structural mills are the ones that get the premiums when the overflow begins.

In raw materials the large tonnages under term contracts are more and more of a factor. Here the contracting parties must go down the line to get their base, as there is nothing farther back. Iron ore and coke have been sold in a large way for long deliveries, though in coke the practice is not largely prevalent as yet. Pig iron is the usual base for ore and coke, though some large ore contracts have been made based on billets. In pig iron probably the largest definite transaction is the one closed some weeks ago, involving 480,000 tons, or 96,000 tons a year for five years, of Bessemer iron for ingot molds. The effect of the whole movement is to commit an increasing number of interests to more stability in the market and greater freedom from the uprushes due to a scramble for steel on an advancing market. A great opportunity is open to the railroads, it would seem, to utilize the sliding scale and long term buying to their own good and the good of the entire trade.

Leading the Immigrant Countryward.

A movement has been started in St. Louis which has as its aim the influencing of immigrants to go beyond the cities and seek homes in regions where men are needed. This particular movement is sectarian in its scope, as it seeks only Catholic immigrants; but it matters little, as the field is a large one, it being well recognized that a very great percentage of the immigrants from southern Europe are of this branch of the Christian faith. The prospectus of the movement states that "Many of the Catholic immigrants from Europe or elsewhere stay in the large American cities, not having, as they think, money or incentive to seek a home outside the city. . . . These poor people live poorly, die poor, crushed by the burden of city life."

That is the meat of the incentive of the corporation which plans to do this work. The company will offer advice and direction to home seekers concerning the location, value and character of land; will arrange easy terms of payment for lands that the home seekers acquire, so that they may not be driven from their farms when once they have settled, and in virtue of options it has secured on large tracts of land the company will sell it at prices impossible for the individual to secure otherwise. In other words, a fatherly eye will be kept on these people, that their way may be made as easy as possible, and this last is very important, so that word may go back across the water to friends at home and help advertise the fact that the immigrant settling in the country has greater hope for the future of himself and his children than he who settles in the city. Such efforts to make good and useful citizens out of immigrants who are now crowding our Eastern cities are very important. As soon as it is realized what good can come of this sort of philanthropy the example will be followed with in-

creasing frequency and with ampler means. The immigrants will never be diverted from the cities excepting as earnest, continued work can teach them that their own welfare and happiness will be increased by the independent and profitable life of the American country, especially in those sections as yet sparsely peopled.

Superintendents Should Not Act as Workmen.

In an address before the recent Chicago convention of the Master Steam Boiler Makers' Association, Robert Quayle, superintendent of motive power of the Chicago & Northwestern Railway Company, speaking to an audience of superintendents and foremen, said: "You men have no business to have your coats off when on duty in your shops unless you are warm. You have no business to take the tools out of a workman's hands to do his work. Your business is to secure results from other men's work. If I find that a foreman boiler maker on my road is doing the work that his men ought to do I begin to think that he had better keep using the hammer and chisel."

This utterance, which will be taken as a heresy by many an old-time master boiler maker who obtained his mastery mainly by superior physical strength and endurance, embodies a truth of vital importance to men whose duty it is to direct the labors of others. A man cannot work with his hands and at the same time give intelligent supervision to a gang of men, and a foreman who does this is apt to lose the control of his men while he is weakening the confidence of his employers in his ability as a general. The best workman is not always fit to be promoted to a foremanship, though a foreman or superintendent is better for knowing how to do and do well every task of every one of his men. In battle the officers are not expected to aim and fire with their men. They carry only side arms and this is for self protection in an emergency.

The proprietor of a business who expects his foreman or superintendent to do a day's labor in addition to his supervision of his men has the wrong idea of economy, and the foreman or superintendent who will regularly do manual labor has better zeal than judgment. The manager who so little trusts his subordinates that he burdens himself with a hopeless mass of details of the $10 a week quality foredooms his failure and probably shortens his life. The successful proprietor or superintendent or foreman sees to it that he has enough men of enough skill to carry on his work, and devotes his own energies to watching, correcting and directing these men, always keeping for himself enough time for the broad study of the general welfare of his business. The large salaries of to-day go to the mentally alert rather than the manually dexterous. Generalship will always receive a larger reward than mere marksmanship or marching endurance.

The New York Central & Hudson River Railroad has had plans made, according to the *Real Estate Record and Guide* of New York, for a bridge across the Hudson River at Fort Montgomery, just below West Point. When the bridge will be built is not known. It is stated that "Presumably the New York Central has bought out the rights and interests of the company which undertook about ten years ago to build an independent bridge and failed for lack of means. Concurrently with the building of a bridge at Fort Montgomery the Central is expected to construct connecting lines on the east and west shores, tapping all important lines, making White Plains an important railroad center, and giving the Bronx, Westchester County and the Sound shore a direct rail route across the Hudson."

The Duty on Steel Strips.

The Treasury Department on Tuesday, June 27, formally reopened the question of the rate of duty applicable to imported steel strips used in the manufacture of car seat springs. Notwithstanding that the Government was defeated in its contentions in the United States Circuit Court and the Federal Circuit Court of Appeals, the Secretary of the Treasury declined to accept as final the verdict of the Appellate tribunal and directed that the Treasury officials make up a "new case." The effect of the litigation just started by Secretary Shaw will be to delay the final determination of the proper duty for at least a year and probably longer. The latest case concerns steel strips imported by George Nash & Co. of New York. It is agreed by both the representatives of the Treasury and the importers that the strips are dutiable at the specific rates mentioned in paragraph 135 of the Dingley Tariff law. The Government holds, however, that the strips have been finished in such a manner that they are subject to the additional duty of 1 cent per pound provided for in paragraph 141 of the tariff act. The importing interests claim that the merchandise does not fall within the provision last named. At the hearing in the Nash test case on June 27 considerable testimony was given in behalf of the Treasury's contention. Later the importers will be afforded an opportunity to be heard. It was apparent from the proceedings that day that the Government will rely largely on the testimony of domestic producers of steel to prove its case. The domestic makers testified that the finishing of the strips was of the kind to place them in the category of paragraph 141 and consequently subject to the extra duty. The United States Steel Corporation was represented at the hearing, and this concern and other large producers are stated to be opposed to letting the strips come into this country without the additional duty, on the ground that such entry would result disastrously to the American makers of strips for use in car seat springs. It is likely that the present litigation will run through all of the Federal courts, including the Supreme Court. Until the question is settled finally the Treasury Department will continue to exact the additional duty on all importations of steel strips.

The Carnegie Schools Open in October.

Announcement is made that the first department of the Carnegie technical schools at Pittsburgh, Pa., will open next October. The department will be known as the School of Applied Science, and there will be day and night courses, providing instruction in those studies essential to a technical education.

Applicants for admission to the school must be at least 16 years old. They will be required to pass an examination in English, mathematics, science and drawing. Certificates from approved schools of high school or preparatory grade will be accepted from students without an entrance examination, but no student will be admitted who does not give evidence of a natural aptitude for technical work.

Residents of Pittsburgh will be required to pay a tuition fee of $20 a year and all other students $30 a year. The examinations for entrance will be held in Pittsburgh during the week of October 9.

Applications have already been received from 7200 persons throughout the world who are desirous of enrolling themselves as pupils at the institute. Every country in the civilized world is represented by those after learning, and most of them are men who have already reached their majorities and who desire to come to America and learn American methods of doing business. The number of applications from France and Germany exceeds those of any other country, while there is a goodly showing from Japan and Russia and a few from China. The Philippines have sent in many applications. On account of the enormous number of applications it has been decided to receive pupils from Pittsburgh and Allegheny first, then the State of Pennsylvania and the other States of the Union, leaving the foreign countries until the last.

The Testing Engineer.*

BY CHARLES B. DUDLEY, ALTOONA, PA.

It is plain that the testing engineer acts in a threefold capacity. He is either an investigator or a counsellor or a judge. He is finding out new truths, he is protecting the interests of his client, the producer, or he is determining by his tests that contracts are being fulfilled, or specifications lived up to, in the interests of his client, the consumer. While all three forms of the testing engineer may be and often are engaged in research, in investigating a knotty problem, or devising means of demonstrating a point, it is perhaps more commonly the work of what may be called the unattached testing engineer to make investigations. The professors in colleges, especially those having a genius for experiment, and indeed independent investigators, who as the result of business shrewdness or by good fortune are so situated that they are not compelled to struggle for an existence, are continually adding to the sum of human knowledge by their tests and experiments while laboring in this field. They have no clients to satisfy, no employer's interests to defend and no antagonisms to overcome, except perchance the unwillingness of nature to yield up her secrets. Their loyalty is to the truth alone, their stimulus their zeal for knowledge, and their reward the approbation of their fellows. These seem to be almost ideal conditions for securing the truth, and it would seem as though results obtained by such experimenters, or testing engineers, and under such conditions, ought to be accepted and acted on without question.

But we venture to suggest that there is one desirable, not to say essential, element in the search for truth that is lacking in the conditions outlined above. This is the element of human antagonism. Perhaps an example will best make the point clear: The subject for investigation, we will say, is a method for determining phosphorus in steel. The professor or independent investigator makes his studies and experiments and publishes his results. During the whole investigation he has been actuated by no desires except to get at the truth. There has been no temptation, except perhaps the desire to finish the investigation, to stimulate him to neglect any essential point, to give any results or draw any conclusions that the most rigid interpretation of the facts would not warrant; and hence so far as accuracy is concerned it would appear as though no questions should be raised. And yet so great is our belief in the value of human antagonism where the truth is involved that we cannot help saying that we would prefer a method which resulted from the contentions of two chemists, the one of whom was the employee of a consumer and who was trying to make out that the sample on which they were both working contained more phosphorus than the specifications allowed, and the other of whom was the employer of the producer, and who was trying to show that the phosphorus in the sample was below the requirements of the specifications, there being a large commercial transaction involved in the result. We cannot help feeling that every point in the method would receive much more severe criticism, and consequently if it survived would be much more worthy of confidence under these conditions, than if it was brought out by a single experimenter making investigations for the sake of publishing them. So greatly does the legal fraternity rely on the element of human antagonism as an essential feature in the development of truth that we are entirely safe in saying that the whole structure of legal procedure is based on this foundation.

Three Classes of Testing Engineers.

There are three kinds of testing engineers to occupy these two fields—viz., the unattached engineer, the consumer's engineer and the producer's engineer. At first there were apparently only two kinds of testing engineers—viz., the unattached and the consumer's. But it did not take long after consumers began to study and test materials and prepare specifications before the producers found it necessary to protect their interests and defend their materials by means of testing engineers in their own employ.

It is perhaps hardly necessary to say that in this our analysis of the scope and field of the testing engineer we have not forgotten the various inspection bureaus and testing laboratories which are doing such excellent work in various parts of the country. As we understand the matter, these organizations, while perhaps not strictly covered by the definitions given in that they do not derive their continuous sustenance in such a way as the unattached testing engineers nor in the same way as those who defend the interests of the consumer or the producer, yet in a certain sense these independent organizations do perform exactly the same functions as the three classes of testing engineers which we have described. Any one of them will make investigations either in the interests of a client or for the sake of the truth alone; any one of them will temporarily or continuously, if the retainer be sufficient, defend and care for the interests of a consumer, or will render a like service for a producer, provided of course that the interests of the two are not antagonistic at the same time.

Outfit of the Engineer of Tests.

What shall be the cast of mind and what the mental equipment of the testing engineer? Upon the first of these topics it is difficult to say much that is positive. It is perhaps easier to say what kind of mind will not succeed in this branch of engineering. We will perhaps all agree that he should be independent, self reliant, gifted with the power of analysis of facts as well as with the power of drawing conclusions from the data at hand. He should be ingenious in devising methods to demonstrate the points at issue and a careful observer of data. He must keep himself free from bias or prejudice and take especial pains that he does not deceive himself. He should be fond of experiment and have a genius for it. Many times during our nearly 30 years' attempt to do something in the line of the work of a testing engineer we have had occasion to paraphrase the Latin apothegm, and say: "Experimenters are born, not made." He should keep constantly in mind the end to which his experiments tend and understand clearly the effect of every step in the progress of his tests and its influence on the final result. Above all, he should be a thinker. No man who when a problem is presented to him simply searches his memory for whatever he may have learned in the schools, or have perchance picked up in his reading which bears on his problem, has any especial call to be a testing engineer. We are quite ready to allow that the power of seeing analogies between your own problem and one that some one else has had, and perchance successfully solved, is a legitimate and useful, not to say time saving, habit of mind. But the point we want to make is that the one who habitually and continuously approaches every problem through memory or by studying up what others have done is far less likely to succeed as a testing engineer than one who habitually attacks a problem by an analysis of its elements.

[Referring to the things that should enter into the education of the testing engineer the address emphasized the great need to-day in engineering lines, as in all fields of endeavor, of men who can think, and expressed the conviction that if men from the schools have been properly trained they will have in some measure a capacity for meeting and mastering the unexpected. Of two young men, one of whom had covered much ground and learned well all the methods and manipulations, while the other, though not acquiring so great a store of facts has mastered principles and knows the reason why, the latter will distance his competitor at the end of ten years. The man who expects to be successful as a testing engineer must study harder the first five or ten years after graduation than at any time while in school. Following these general statements the address took up some pertinent illustrations, as follows:—Ed.]

A Practical Question.

Not long ago we separately asked three recent graduates, each one from a different and entirely reputable school, why nitric acid is used to dissolve steel when one is going to determine the phosphorus? Why not use

* Extracts from the Presidential Address before the American Society for Testing Materials, Atlantic City meeting, June 29, 1905.

some other acid just as well? Two of the three replied that they supposed that nitric acid was a good solvent for steel, and they knew of no reason why any other acid that would dissolve the steel would not do as well. The third answered that in order to take the next step in the process it was essential that the phosphorus should exist as orthophosphoric acid, and that nitric acid being an oxidizing agent would bring the phosphorus to that condition. Now each of these three recent graduates knew how to determine phosphorus in steel, and, as a matter of fact, each of them had done it in an entirely acceptable manner and under check for six months or more in my own laboratory. All three of them were familiar with the method and with the manipulation. But as we look at it only one of them had been properly taught. He not only knew the method and the manipulation, but he also knew the reasons why and the principles underlying the method. One of my assistants put the matter very forcibly. He said: "The chemist who knows methods and manipulation gets along swimmingly as long as everything goes well, and perhaps turns out more work in a day than a thinking chemist who understands the reason why for every step in his analysis, but let a difficulty arise and your method chemist is absolutely lost."

Problem of a Broken Axle.

We recently saw a broken steel car axle. The break occurred 10 or 12 inches from the end of the axle. On examining both ends there was some appearance of seams, not radial, but rather in a sense irregularly parallel to the circumference. These seams suggested that probably the axle was made from a billet coming from somewhere near the top of the ingot and that the seams were in some way connected with the pipe. It was reasoned that if this were true an analysis of the metal from the surface and from the center of the cross section of the axle would show segregation, and that if, for example, much higher phosphorus were found in the center than at the circumference it would almost be a demonstration of the location of the billet. Of course, the whole object of the study was to see if any information could be obtained that would prevent the acceptance of such bad axles in the future. It should be mentioned that the broken off piece was sawed in two lengthwise and that when this was done from one of the halves a core amounting to about a third of the cross sectional area actually fell out, showing that the seam indications at the end were genuine and that the seam did actually exist. The analysis above referred to was made and to our astonishment showed lower phosphorus in the center than in the circumference. This seemed to settle the question as to the relation between the seam and the pipe, and indeed we regarded it as conclusive evidence that the billet from which this axle was made was not taken too high up in the ingot, but it left unsettled the cause of the seam.

Perhaps, however, a few words further on certain well known phenomena in steel metallurgy will help us in clearing up the point: It is obvious that if in a big ingot a portion of it contains more than the normal amount of phosphorus, carbon or sulphur, as is actually the fact in the case of segregation, it must follow that there will be parts of the ingot which will contain less than the normal amounts of these constituents. It is generally assumed that the outside of a forging like an axle gives very close to the normal analysis of the steel, since from the method of manufacture this outer metal was near the surface of the ingot when the metal was cast, and consequently cooled too quickly to permit perceptible segregation. Also, if we are right, the analysis of borings taken from different parts of the inner face of an ingot sawed in two lengthwise for the purpose shows that phosphorus, carbon and sulphur near the middle of the lower third of the ingot are usually below the normal. Now, since the phosphorus in the center of our axle was lower than in the circumference, it seems evident that the billet from which it was made must have been from somewhere in the lower third of the ingot. Apparently, therefore, we must look here for the cause of the seams. The steel makers present have undoubtedly some time since foreseen the cause of the difficulty with this axle. For the benefit of the others we may say that seamy bottoms of ingots are now usually explained by wet or insufficiently dried bottoms of ingot molds. The steam or other volatile material generated by the heat of the molten metal can apparently only escape up through the molten metal itself, forming a seam which the subsequent treatment does not weld up.

A Cavity Due to Strain in Heating.

Another brief illustration will perhaps emphasize the importance to the testing engineer of familiarity with the minute details of industrial processes: A couple of years ago, while the finishing cut was being taken on a steel driving axle in a lathe, the operator noticed in the freshly cut surface what appeared to be a small flaw. On testing this with a pin the pin disappeared and quite a length of fine wire followed it. On taking out a transverse slice of the axle at this point a cavity was found in the metal which would hold ½ pint or more. The walls of the cavity were perfectly clean and bright, and but for the fact that the finishing cut just happened to open up the cavity a trifle its presence would not have been suspected and the axle would have gone into service. It is perhaps safe to say that one-quarter, or, possibly, one-third, of the cross sectional area of the axle was embraced in the cavity. We have seen a number of such cases and unfortunately the phenomenon is not too rare. Almost any practical steel maker when asked for the cause of such a cavity in what is apparently a solid piece metal would probably laconically answer, "Careless heater." In order to understand this statment it is necessary to say that many driving axles, even when they are finished, are about 11 inches in diameter, and that the bloom from which they are forged is considerably larger. If, now, such a bloom when cold is put into a hot furnace the outside layers get hot long before the inside has begun to raise much in temperature. A severe strain due to the greater expansion of the outside layers is accordingly set up, which strain is enough occasionally to actually rupture the inside. Subsequent forging opens out this rupture into a cavity. The rupture is usually accompanied by a noise like a pistol shot. The unfortunate part of the business is that there being a number of blooms in the furnace at one time it is impossible to tell which one has yielded to the strain. As would be expected, the larger the axle the more common this defect, and we know of one large railroad that bores a 2-inch hole through every axle over 8 inches in diameter that is destined for passenger service. The boring of the hole enables the cavity to be discovered either by the behavior of the drill or by sight examinations after the hole is finished. It is interesting to know that something over 2 per cent. of all axles bored are defective in this way.

Positions with Consumers Preferable.

It may seem an idle question, but it is certainly an interesting one, which of the three kinds of testing engineers has the most attractive field of work. The unattached testing engineer certainly has the greatest freedom, but at the same time the least stimulus. The producer's testing engineer undoubtedly has the best financial reward, but at the same time the narrower field. He has, however, the advantage of concentration, and as almost every modern industry has scores of unsolved problems connected with it there is no reason if he will work why he should not achieve a great success. On the other hand, the consumer's testing engineer has unquestionably the broader field, the greater chance for initiative and, perhaps more important than all, an opportunity to study the behavior of materials in actual service. This last item gives him a great advantage. The behavior in service is unquestionably the ultimate criterion by which every industrial product must be judged and by whose decision sooner or later it must stand or fall. Undoubtedly individual characteristics are a legitimate element in the choice, but our counsel would be to every ambitious testing engineer to get as near to the service as possible, and to this end to make some sacrifices, if necessary, to secure a position with a consumer.

And this brings us to another point: We have many times heard complaints of the dullness and unsatisfactoriness of spending one's days and weeks in making

routine tests. We are compelled to say that we do not understand this. It is one of our sincere regrets that we are no longer able to do routine work. To us there is genuine pleasure in seeing how the test comes out in each individual case, although we may have performed the same operation over and over again. Moreover, there is scarcely a method in use to-day, either in chemical or physical testing, that is not capable of improvement, either in accuracy or speed or both, and what better opportunity for suggestions could be desired than is furnished while the hands are busy doing that which from long practice they do almost automatically and with the attention necessarily directed to the subject in hand, leaving the mind almost free to dwell on possible changes leading to progress? Some of our very best thoughts have come to us while engaged in routine work. One is very near to nature's heart when making tests, even routine tests, and if his mind at such times is alert and receptive she will not infrequently give him a hint or disclose a fraction of some of her secrets to his view.

The Testing Engineer and Graft.

There is one more phase of the work of the testing engineer which will perhaps bear a few words, and that is the relation between the testing engineer and those whose material he is testing. This is unquestionably a delicate subject, one that we would all gladly feel did not need discussion or comment, and yet one that is constantly thrusting itself into prominence in some form. For the honor of human nature it is gratifying to be able to put on record that during nearly 30 years of almost constant testing only once have direct financial considerations been urged upon us to influence our verdict in regard to material. On the other hand, we have heard representatives of entirely reputable business organizations say openly: "It costs us something to sell our goods, and it is entirely immaterial to us whether this money goes to our selling agents or to the representatives of the consumer." And this is not the worst phase of the matter: It is well known that the representatives of consumers, who act in some sense in the capacity of testing engineers, in that their opinion or decision determines the placing of orders, not only accept substantial considerations from producers, but even demand them, if not openly, at least indirectly. The subject is one on which much might be said. An hour could readily be filled in narrating incidents and portraying the forms in which the hydra-headed monster graft manifests itself. We are confident that neither side is free from blame; we are equally confident that strict, open honesty is the only safe course. It may not be amiss to add that so insidious are the forms in which this evil manifests itself that they would at times deceive the very elect; and, while it is not possible to discuss these matters without raising interminable questions of casuistry and metaphysics, it is possible so to act as to have the continuous approval of a good, clean conscience. No universal rule can be given. Each one in a sense must be a law unto himself. Perhaps the best every day working rule for young testing engineers is, do nothing you would not be willing to talk over with your employer, even in the presence of the other party. It is sometimes a bit hard to resist and say no, but of one thing be sure—every departure from strict integrity will sooner or later return to plague you, and should your actions ultimately result in your downfall from none will you get less sympathy than from those who may have contributed to your disaster.

A large number of manufacturing plants at Youngstown, Ohio, will be closed for the next week or two for inventory and repairs. Among these are the two hoop mills of the Carnegie Steel Company, the Brown-Bonnell, Valley and Bessemer plants of the Republic Iron & Steel Company and the plants of the Youngstown Iron & Steel Roofing Company and the Youngstown Sheet & Tube Company. Suspension of work at these plants will be as short as possible, and most of them will likely be in operation again by July 10. It is possible that the Bessemer plant of the Republic Iron & Steel Company may be idle for a longer time as some extensive repairs are to be made.

PERSONAL.

Guy R. Johnson, after two and one-half years' service, has resigned the superintendency of the blast furnaces at the South Works of the Illinois Steel Company. His associates presented him with a diamond ring and a traveling case in token of their esteem.

Thomas J. Neacy, president and manager of the Filer & Stowell Company, has been appointed one of an entirely new School Board of 12 members for the city of Milwaukee.

Harold U. Wallace has accepted the third vice-presidency of J. G. White & Co., New York. He resigns as chief engineer of the Illinois Central Railroad to accept this position. Among other important work he carried out for that railroad was the lake front improvement work at Chicago. This work included the depression and reconstruction of 20 miles of main lines and yard tracks.

F. K. Copeland, president of the Sullivan Machinery Company, Chicago, has spent the last week at Claremont, N. H., supervising the erection of the company's large Eastern plant.

W. E. Farrell, for a number of years manager of the Birdsboro Steel Foundry & Machine Company, Birdsboro, Pa., has severed his connection with that company to accept the position of vice-president of M. H. Treadwell & Co. of Myerstown and Lebanon, Pa. Mr. Farrell will be located at Lebanon, having charge of that plant.

E. D. Clarage, manager of the Cleveland office of the Crucible Steel Company of America, has resigned to take charge of the Cleveland office of the Columbia Tool Steel Company, Chicago Heights, Ill. The office will be at 121 Bank street, Cleveland. Associated with Mr. Clarage will be J. L. Mitchell, who has been salesman for the Crucible Steel Company of America in the Cleveland district.

Alexis Brady Blanchard, connected for about 15 years with the Carnegie Steel Company at Pittsburgh, has resigned.

John R. Davis, one of the department superintendents of the Duquesne Steel Works of the Carnegie Steel Company, has resigned to accept a position with the Pottsville Steel Company.

Prof. Henry M. Howe, professor of metallurgy, Columbia University, New York, received the degree of LL.D. from Lafayette College June 21, and the same degree from Harvard University June 28.

W. A. Stadelman, Eastern agent of the Wellman-Seaver-Morgan Company, who has been in charge of the Eastern office at 42 Broadway, New York City, has been appointed general sales agent of the same company, with headquarters at Cleveland, Ohio, taking effect July 1. Fred. Stadelman has been appointed assistant manager of the company's New York office. Harry V. Croll, for the past eight years with the E. P. Allis Company and its successor, the Allis-Chalmers Company, has resigned and accepted a position with the Wellman-Seaver-Morgan Company.

Charles E. Lozier, for several years sales manager of H. A. Lozier & Co., Cleveland, Ohio, makers of the Cleveland bicycle, has accepted the position of general manager of the Columbia Steel Company, Elyria, Ohio. Mr. Lozier succeeds F. C. Gilbert, who becomes assistant manager of the Pope Tribune automobile factory, Hagerstown, Md.

George S. Garritt, assistant general manager of sales of the National Tube Company, Pittsburgh, has been appointed manager of sales of the San Francisco office of that company, succeeding C. M. Woods, resigned.

Fred. T. Towne, general superintendent of the Yale & Towne Mfg. Company, Stamford, Conn., has been seriously ill, having undergone an operation on July 1 for appendicitis.

Wm. R. Webster of Philadelphia sailed last week for Europe.

Charles C. Woods, who has been secretary of the Wheeling Mold & Foundry Company for three years, has resigned to become secretary of the West Virginia Bridge & Construction Company at Glennova.

J. N. Wallace, president of the Central Trust Company, New York, has been elected a director of the Sloss-Sheffield Steel & Iron Company, succeeding W. E. Strong, deceased.

George A. Baird, vice-president and general sales agent of the Republic Iron & Steel Company, has resigned to devote all his attention to the P. L. Kimberly Estate, of which he is an executor.

John F. Stevens of Chicago, until recently general manager and vice-president of the Rock Island Railroad, has been appointed chief engineer of the Isthmian Canal Commission to succeed John F. Wallace, resigned.

F. H. Eaton, president of the American Car & Foundry Company, has retired from the directorate of the American Steel Foundries.

W. I. Moody, for many years general manager and director of the American Rolling Mill Corporation, has, on account of ill health, severed his connection with the company and is seeking health and rest in California. Mr. Moody is succeeded by L. Burnstein, who has been with the company for six years. General offices of the company are in the Stock Exchange Building, Chicago, and its mills are at Muncie, Ind.

Major James G. Warren, United States engineer in charge of Government work on the west shore of Lake Michigan, with headquarters at Milwaukee, has been transferred to Cincinnati. Many improvements have been made at the harbor of Milwaukee under his direction, including the finishing of the harbor of refuge.

George E. Yeomans, purchasing agent of the Chicago, Burlington & Quincy Railroad, has accepted the position of assistant to F. A. Delano, the new vice-president of the Wabash Railroad. Mr. Yeomans is succeeded by L. N. Hopkins, who was supply agent of the Burlington.

Thomas C. Best has entered the employ of the Scully Steel & Iron Company, Chicago, and will make his headquarters with that company's New York office. Mr. Best was for years foreman boiler maker of the Chicago & Northwestern Railway at Aurora, was one of the founders of the National Master Boiler Makers' Association and was editor and publisher of a paper known as *Motive Power*, devoted to the boiler making interests, which paper he later sold to H. L. Aldrich, who is now operating it under the name of the *Boiler Maker*.

W. H. Derbyshire, president, and H. E. Derbyshire, superintendent, of the Chambersburg Engineering Company; A. M. Castle of Chicago and Charles Bole, manager of Manning, Maxwell & Moore, Pittsburgh, will sail on the Baltic July 26 for a six weeks' European pleasure trip.

T. A. Rickard, since 1903 editor of the *Engineering and Mining Journal*, announces that he has resigned. Walter R. Ingalls suceeds him.

Harvey Kelly has been appointed superintendent of the new rail mill of the Republic Iron & Steel Company at Youngstown, Ohio, and Edward Moore will be his assistant.

D. H. Ramsbottom, who has been chief of the order department, National Tube Company, Pittsburgh, has been made assistant to E. C. Downer, general manager of sales. J. A. Caughey, chief of the order department of the National Works of the National Tube Company of McKeesport, succeeds Mr. Ramsbottom.

Sheet Mills Consolidate.—The interests of the American Rolling Mill Company, at Middletown, Ohio, and those of the Muskingum Valley Steel Company, Zanesville, Ohio, have been consolidated into one concern, which will retain the name of American Rolling Mill Company. The plant at Middletown, Ohio, contains one 35-ton and one 50-ton basic open hearth furnaces, bar mill, four hot sheet mills, two roughing mills and two cold mills. The plant also contains a manufacturing department which turns out roofing sheets, conductor pipe, eaves trough and all kinds of sheet metal building material. The Zanesville plant contains five hot mills, two roughing mills and two cold mills. The total annual capacity of the two plants will be 35,000 tons of ingots and 30,000 tons of black and galvanized sheets, including roofing materials. The consolidated concern will issue $800,000 in preferred stock, bearing 6 per cent. cumulative interest and $600,000 in common stock. The new officers are: George M. Verity, president and treasurer, Middletown; W. F. Simpson, vice-president, Cincinnati, and R. T. Phillips, secretary, Middletown. They, together with F. H. Simpson, W. C. Herron, both of Cincinnati, J. M. Iseminger, Middletown, and W. S. Horner, Pittsburgh, constitute the Board of Directors. Goff, Horner & Co., Limited, Frick Building, Pittsburgh, will have charge of the sales of the entire output for the Eastern district, which comprises eastern Ohio, Pennsylvania, New Jersey, New York, the New England States and some of the Northern and Southern States.

NEWS OF THE WORKS.

Iron and Steel.

The Shenango Valley Steel Works and the four blast furnaces of the Carnegie Steel Company, at New Castle, Pa., which are now idle, are expected to start up not later than July 15. The steel plant was closed down on account of a break in the blooming mill engine, while one of the furnaces was blown out for repairs and the other three were banked during idleness of the steel plant.

The plant of the Boston Steel & Iron Company, Medford, Mass., including all of its machinery and other equipment, will be sold at public auction July 11.

Topton Furnace has been blown out by the Empire Steel & Iron Company and will be repaired at once. The furnace, which is at Topton, Pa., has been in blast since November 7.

The Pennsylvania Steel Company officials state that there is no trouble among bridge or structural men at Steelton, Pa. Attempts to unionize at that place were failures.

After six months' continuous run the tin plate mills of the Lalance & Grosjean Company at Harrisburg, Pa., suspended for a fortnight to take stock account and for repairs.

Four old furnaces of the Allentown Iron Company at Allentown, Pa., have been sold for scrap iron. They were built in 1846 and played an important part in the history of the iron industry of the Lehigh Valley. There are two furnaces remaining of the old plant and they are now being operated by a lessee.

The St. Louis Blast Furnace Company, St. Louis, Mo., has purchased for $15,000 the iron ore property belonging to the Lenox and Parry interests at Mudville, Mo. The new owner will build a railway from St. James to the mines.

At the recent annual meeting of the Burden Iron Company, Troy, N. Y., the following officers were elected: James A. Burden, president; James A. Burden, Jr., vice-president; John L. Arts, general manager, and Nicholas J. Gable, secretary.

The Imperial Steel & Wire Company, Toronto, Canada, decided at a recent meeting of the Board of Directors to double the capacity of its plant, making the output 50 gross tons per day. An additional boiler of 150 horse-power has already been installed and engines and machinery will be ordered at once. The company will also install a galvanizing plant during the coming year.

The Toledo Furnace Company, Toledo, Ohio, is receiving estimates on boilers for its new furnaces, but it is understood that the balance of power equipment will not be taken up until next spring.

Chateaugay Ore & Iron Company is enlarging its furnace at Standish, N. Y.

The Northside Iron Company, Sharpsville, Pa., has practically abandoned its furnaces.

There is no truth in the statement that the Nova Scotia Steel & Coal Company is to remove its steel plant from New Glasgow to the Sydney mines. At the Sydney mines the company has just completed several 50-ton open hearth furnaces and is now in a position to work hot metal direct from its new blast furnaces at that point. The output of the mills at New Glasgow will be very largely increased by the additional tonnage which the company intends to make in its new plant at Sydney mines.

The new 84-inch plate mill being built by the La Belle Iron Works, at Steubenville, Ohio, is expected to be ready for operation in August. The mill is being erected by Mackintosh, Hemphill & Co., Pittsburgh.

General Machinery.

The Western Electric Company's new plant at Hawthorne, in the western part of Chicago, is practically completed.

The Columbus Pneumatic Tool Company, Columbus, Ohio, has been making improvements to its plant and has recently purchased from Cleveland dealers a number of new tools, including lathes, milling machines, grinders, &c.

The Houghton Elevator & Machine Company, Toledo, Ohio,

has about completed a remarkable portable asphalt plant, designed for laying and repairing asphalt streets. The machine is 14 feet high, 9 feet wide and 65 feet long, and has a capacity for laying 2000 square yards per day. The machine has two railroad tracks for transportation by railroad. It cost $15,000 and was two years in building. George Merriman of Toledo, the inventor, is organizing a company to build the machines.

The Turner, Vaughn & Taylor Company, Cuyahoga Falls, Ohio, has just shipped a complete wire mill outfit to Japan. This company is also working on several large contracts for wire mill machinery and equipment for three sewer pipe factories.

A disastrous fire in the business district of Cleveland Monday morning destroyed the plant of the Willard Storage Battery Company and damaged the stores and warerooms of Fairbanks, Morse & Co. The first mentioned concern suffered a loss of $50,000 on equipment, a large amount of wood and metal working machinery being used in the production of batteries. The company will secure another location as soon as possible. Fairbanks, Morse & Co. suffered a loss of about $30,000 to their stock of pulleys, pumps, motors, scales, wind mills, &c., and the repair shop equipment was destroyed.

The T. H. Forrest Machine Company, Chicago, has been incorporated to build special machinery. The incorporators are: T. H. Forrest, Emil Widmer and A. E. Widmer. The company is established at 224-226 South Clinton street.

The Dodge Mfg. Company, Mishawaka, Ind., has closed its second contract with the Japanese Government. This order is for $30,000 worth of machinery. The company is also completing a big order for the Morgan & Wright Rubber Company, which is moving from Chicago to Detroit, where it will erect a $1,000,000 plant.

The Elgin, Joliet & Eastern Railroad Company, a branch of the Illinois Steel Company, has purchased from the Niles Tool Works bending rolls, a wheel press and an axle lathe, and from Joseph T. Ryerson & Son a Lennox bevel shear.

The Burrell Construction Company, 263 La Salle street, Chicago, is constructing six small grain elevators in various parts of the West and will install small boilers and engines for the larger installations and gasoline engines for the smaller, together with hoisting machinery.

The Illinois Steel Company is pushing the work of installing an extensive addition to the Hoover & Mason ore handling plant at South Chicago.

The Fitz Water Wheel Company, Hanover, Pa., is in the market for a machine to make iron washers from shearings from steel stock, also a 36-inch band saw. These machines may be second-hand or new, but must be in good condition.

The Driggs-Seabury Ordnance Corporation, Sharon, Pa., does not intend to install any new machinery in its new erecting shop at the present time with the exception of some small jib cranes.

The Schoen Steel Wheel Company, Pittsburgh, Pa., has recently placed orders for a number of new machine tools for its plant, including three Putnam wheel boring mills, one 42-inch Putnam lathe and two Colburn boring mills. These machines are motor driven, equipped with Westinghouse motors.

The Standard Stamping Company, Marysville, Ohio, is preparing to double the present capacity of its plant and will add considerable new machinery. The company manufactures carriage heaters, bread toasters, spray pumps, lawn sprinklers and other hardware specialties.

Power Plant Equipment.

The Manitoba Iron Works, Limited, Winnipeg, Manitoba, has been awarded contract for two 66-inch boilers and a 250,000-gallon steel water tower for the new Portage la Prairie (Man.) water works. The Manitoba Company has just installed $5000 worth of bolt making machinery in its plant and is turning out a large quantity of bridge and other heavy structural work.

The Vaughn Paint Company, Cleveland, Ohio, will erect a new power house. Boilers have been ordered from the Erie City Company and an engine from the Buckeye Engine Company.

The Mutual Light & Water Company, Bellevue, Ohio, has secured a franchise in that place, with city contracts, and will soon commence the erection of a lighting and pumping station. B. F. Bell, C. W. Bell, W. H. Bell, Peter Brady and E. C. Crocker are interested in the company.

The Cleveland Electric Railway Company, Cleveland, Ohio, has placed contracts for an addition to its Viaduct power station. It will install a 1500-kw. unit, consisting of an Allis-Chalmers engine and a Westinghouse generator, together with 2000 horse-power of Sterling boilers and chain grate stokers. Considerable auxiliary equipment will also be installed.

The St. Albans Foundry & Implement Company, St. Albans, Vt., manufacturer of agricultural implements, has begun the manufacture of gas and gasoline engines. It is the intention to develop this branch of the business gradually, and the company will not be in the market for an extensive new machine equipment in the immediate future.

The Columbus Street Railway & Light Company will build a power house and steam heating plant at Columbus, Ind.

Carlos F. Plant, Estacion de Sabinas, Coahuila, Mexico, is in the market for a second hand boiler and pump.

The Norton Machinery Company, Cincinnati, Ohio, is in the market for a second hand 300 to 500 kw. generator on sliding rail base.

The Bohemian Benedictine Press, Chicago, is in the market for a gas engine, which will be utilized for power purposes in a new printing shop being built by that company.

The Telephone Improvement Company, D. L. Smith manager, Sweetwater, Tenn., will receive bids until July 31 on one 60-kw. generator of 1100 volts.

The Kerlin Brothers Company, Toledo, Ohio, has purchased the plant of the Kenton Gas & Electric Light Company, Kenton, Ohio, and is securing estimates on new electrical and steam equipment to cost $50,000.

Foundries.

The Reading Stove Works, Orr, Painter & Co., Reading, Pa., is making a number of improvements to its plant. An addition 49 x 230 feet is being built to the foundry, accommodating some 35 more molders. The steam and hot water heating mounting room is to be increased to three times its present capacity. Overhead tramway systems connecting the foundry, cleaning room, machine shop and warerooms are to be installed, and the power plant is to be doubled in capacity, electric power being used.

The Ensign Foundry Company, Auburndale, near Toledo, Ohio, will shortly place contracts for the erection of two new foundry additions. One building will be 60 x 127 feet and the other 40 x 87 feet.

Bridges and Buildings.

The Topeka Bridge & Iron Company, Topeka, Kan., has the contract for the Sardou avenue bridge at Topeka, which will cost $13,900. When completed the bridge will be 880 feet long, built in six spans.

The Central States Bridge Company, Indianapolis, Ind., was awarded the contract by the Marion County Commissioners, to build a bridge over White River, Indianapolis, for $90,000. The specifications call for a three-span seven-centered stone faced concrete steel arched bridge with 24-foot roadway and 8-foot cement walks. Three other bids were: Moore-Mansfield Construction Company, $99,900; Wm. Fife & Son, $96,452; E. M. Graves & Co., $99,233.

Wm. B. Scaife & Sons Company, Pittsburgh, Pa., has just been awarded the contract for all the structural steel work in connection with the Post Falls (Idaho) power plant to be built for the Washington Water Power Company, Spokane, Wash. One building is 83 x 174 x 52 feet high, and another 80 x 32 x 33 feet high.

The Temple Ornamental & Structural Iron Works Company, Temple, Pa., recently incorporated with a capital stock of $100,000, has purchased a site of 5½ acres adjacent to the Pennsylvania Railroad tracks, upon which it is erecting a plant under the plans and specifications of Geo. Gerhard, Reading, Pa. This shop will ultimately be used for ornamental work exclusively, as the company purposes to build a steel freme shop in the near future for heavier work. All machinery for the present requirements has been purchased, and the company expects to commence operations in the new plant about the middle of July. At present the company is operating a temporary works at Green and Gordon streets, Reading, and already has contracts on hand aggregating over $20,000. The products will be ornamental architectural and cast iron work. Alfred J. Genner, president and general manager, was formerly superintendent of the Wm. F. Remppis Company, Reading, for over four years, and prior to that was in charge of the iron department for eight years of the Jackson & Sharp Company, Wilmington, Del. Albert S. Johnson is secretary and treasurer.

Fires.

Fire caused about $15,000 worth of damage to the carpenter shop and quartermaster's building of the Chicago Hardware Foundry Company's plant at North Chicago, Ill., recently. The insurance has been adjusted and building operations are under way for the construction of large brick and steel buildings to replace the old wooden ones, which will make the plant of similar construction throughout.

Edward W. Clark, machinist, Hartford, Conn., suffered a loss of $8000 by fire last week, his machine tools being badly damaged.

The car shops of the Baltimore & Ohio Railroad at Keyser, W. Va., were badly damaged by fire last week. The loss, with the cars that were burned, is in the neighborhood of $20,000.

The plant of the Damascus Brake Beam Company at Sharon, Pa., was destroyed by fire June 26. The loss is placed at about $15,000.

Hardware.

The Westfall-Moore Hardware Company, Lafayette, Ind., has changed its name to the Moore & Kemple Hardware Company.

The Mount Carmel Bolt Company, Mount Carmel, Conn., is putting up another building between the two structures that

comprise the present plant. The new building will be used for annealing and boiler room.

I. E. Palmer, manufacturer of hammocks, Middletown, Conn., is to erect an addition to his factory, 40 x 96 feet and three stories. The building will enlarge present manufacturing facilities.

The National Bolt & Nut Company, Pittsburgh, has received a contract from the Pullman Company of Chicago for 2500 kegs of hot pressed nuts.

Following the recent sale of its plant to the John A. Roebling's Sons Company, the J. E. Fox Saw Works, Seattle, Wash., has purchased a site on the tide lands in the southern part of the city, which is larger and more commodious than the old quarters, and has begun the preparation of plans for a new plant, which will be built of either brick or concrete. There will be two buildings, one 40 x 120 feet, two stories in hight, and the other 40 feet square. The smaller building will accommodate the tempering ovens and will be located in the rear of the larger building. The plant will be electrically operated, equipment being removed from the old works to the new site. Largely increased output is being provided for, as, for instance, two milling machines which have never been set up will be used in the new plant, at least two extra anvils will be installed, and the capacity of the tempering ovens will be increased. There is a probability, too, of putting in an extra drop forge for making saw bits, shanks and teeth.

Miscellaneous.

The Central Rubber Company, Kansas City, Mo., has been organized by Cassius M. Gilbert and others, and will expend about $150,000 in the erection of plants for reclaiming rubber and for the manufacture of mechanical rubber goods. Plans are now under way for a reclaiming plant at Akron and later a plant will be erected at Kansas City for the manufacture of rubber goods.

The receivers of the Penn. Radiator Company, Corry, Pa., were last week granted permission by the court to sell the plant to George Blackmore. The works will be started at once, employing 500 hands.

The American Textile Specialty Machinery Company, 415 Broadway, New York, which was recently incorporated, will manufacture the Never Slip cop spindle and other textile machinery and tools.

The Chattanooga Plow Company, Chattanooga, Tenn., has bought an additional piece of property, but it is not the intention to build any new buildings at the present time. During the past year the company has spent about $75,000 on improvements to its plant, which is now completely equipped with electricity, making it one of the most modern plow factories in this country.

The La Riviere Metallic Packing Company has incorporated with a capital stock of $100,000 to operate at Evanston, Wyo. A metallic piston packing, the invention of Joseph La Riviere, will be manufactured. The officers are: B. L. Winslow, president; C. B. Gunnell, secretary; Jos. La Riviere, general manager; F. M. Foote, vice-president, and Chas. Stone, treasurer.

The Norcross-West Marble Company, Dorset, Vt., is contemplating the building of a large mill at its quarries, as a result of acquiring extensive marble lands and water powers in northern Bennington and southern Rutland counties, Vt. It is not determined what the capacity of the mill in gangs will be.

The Vergennes School Seat Company, Vergennes, Vt., is to put in a few light machines later in the season in connection with improvements to the plant now being made, consisting of removing a building and combining it with the present factory.

The Shelby Machine Company, Shelby, Ohio, has organized with a capital stock of $20,000. This company has been in existence for some time, but was only recently incorporated. Some changes are contemplated in the equipment of the works, but these have not been definitely decided on. The officers of the company are: A. C. Morse, president, and H. Brubaker, secretary and treasurer. Its line of business is the manufacture of tube specialties, safe end welding on boiler flues and the employment of a special process for closing the ends of tubing ranging in size from ½ inch to 10 inches in diameter.

The Birmingham Frog & Crossing Works, Anniston, Ala., recently organized for the manufacture of railroad crossings, frogs, switches, &c., is now having plans prepared for its new plant, which is to be located at North Birmingham. The company expects to begin active operations about September 1. W. W. Stringfellow is president and E. M. Kilby treasurer and general manager.

Ellis W. Morse & Co., Binghamton, N. Y., recently moved into its new five-story building at 81 State street, in which it will have one of the finest equipped mill and steam supply stations in the State. The first floor will be devoted to sample room and mainly for the display of tools, machinery and steam specialties; second floor, valves and steam goods, and the front portion for the working office; third floor, wood split and wrought steel split pulleys, friction clutches, shaft couplings and transmission material; fourth and fifth floors for reserve stock. The basement contains only pipe fittings and shaftings and the most complete facilities for handling the stock.

The Pittsburgh Steel Tie Company, recently organized by Lyman E. Ailes and others, has purchased the buildings which were built for the Avonmore Construction Company, Avonmore, and will equip them for the manufacture of steel ties. Some new machinery will be installed at an early date.

It is stated that the American Shipbuilding Company of Cleveland, Ohio, has orders on its books aggregating $5,000,000 and is negotiating for contracts amounting to about $3,000,000.

The Atlanta Iron, Brass & Spring Company, Atlanta, Ga., has awarded contracts for a new building to be added to its plant. The structure will be 100 x 200 feet and two stories in hight. The company intends to manufacture a first-class line of iron and brass spring beds.

The American Sanitation Company, First National Bank Building, Chicago, is placing on the market a combined sprinkler and street sweeper which lifts the sweepings to the storage tank, over which they are discharged mechanically to dump carts. The company is being organized, and when this is completed will purchase or erect shops near Chicago.

The Kellogg Harvester Company has completed and is operating its new plant at Plano, Ill., where it is turning out self binding harvesters, corn harvesters, grain shockers, corn pickers and huskers, mowers, cultivators and manure spreaders.

The H. B. Olmstead Company, manufacturer of plumbers' woodwork, which is about to move from Brooklyn, N. Y., to New Britain, Conn., has incorporated under Connecticut laws, the new company buying out the old. The capital stock is increased from $20,000 to $100,000, $55,000 of which is already subscribed. The new plant will largely increase the manufacturing capacity of the company.

The Hercules Belt Lacing Company, Boston, Mass., has been incorporated under Massachusetts laws to manufacture a new belt lacing. The officers are: President, E. George Black, Roxbury; treasurer and clerk, John Rowe, Jr., Boston; directors, these officers and R. L. Baldwin, Medford, and R. I. Burrill, Charlestown. The authorized capital stock is $100,000. The company has not made plans for manufacturing, but the factory will probably be located either in Salem or Peabody, Mass.

The Essex Motor Car Company, 60 State street, Boston, Mass., has been incorporated under Massachusetts laws, with authorized capital stock of $100,000, to manufacture automobiles. The company has plans for a steam touring car, the steam to be supplied by a semiflash steam generator, patents for which are controlled. The car will be manufactured by S. R. Bailey & Co., Amesbury, Mass. The officers are: President, Arthur Lovering, Brookline; treasurer, L. W. Cushman, Brookline; clerk, F. D. Brannan, Cambridge; directors, the above and H. E. Davis, Belmont.

The Standard Mfg. Company, Piqua, Ohio, has been reorganized by I. B. Patterson, S. M. Rust and others, the business formerly conducted under the same name having been closed down for some time. Considerable new machinery is being installed and the company will manufacture galvanized conductor elbows and shoes, down spouting, &c. S. M. Rust, secretary, writes that the company expects to have one of the best equipped plants in the country for this line.

The Consolidated Mfg. Company, Toledo, Ohio, formed a short time ago by the consolidation of the Kirk Mfg. Company and the Snell Cycle Fittings Company of that city, has increased its capital stock to $1,000,000, and will make important improvements to its plant, which is already one of the largest in Toledo. The company manufactures automobiles, bicycles, forgings, pumps, motors, compressors, sheet metal goods and numerous other products.

The National Metal Furniture Company has been incorporated at Tell City, Ind., with $50,000 capital stock, by E. G. Huthsteiner, John M. Kreisle, Fred. J. Hermann and others.

The Rubber Development Company (Cie. Explotadora de Hule) of Mexico is establishing plants for the manufacture of rubber from the guayule plant at Villa Ocampo, Coahuila and Cuencama, Durango. Four other plants in Coahuila and Durango will be erected later. The company has already purchased several Babcock & Wilcox boilers in England and has just bought a 125 horse-power engine, as well as dynamos and other necessary equipment in Mexico, and is also negotiating with London parties for the delivery of retorts for cooking the guayule plant in such a manner as to extract its rubber content. The system is described by the company as being a combination of chemical and mechanical processes by the dry process, which is used at a great saving in cost compared with the ordinary wet process. The company now has a plant in operation in Mexico City and it has made contract for the purchase of 100 tons of the guayule plant daily. This operation is in the hands of E. Delafond, apartado Correo 2290, Mexico City.

The Union Stopper Company, Morgantown, W. Va., is to erect a new building, 80 x 150 feet. The equipment has all been secured.

The Sharon Steel Hoop Company, Sharon, Pa., makers of billets, sheet and tin bars, cotton ties, hoops and bands, has signed the Amalgamated scale.

The Iron and Metal Trades

The feeling in the Iron trade generally is distinctly hopeful and yet there is little that is tangible to justify increased optimism. Those branches which saved the situation after the check of the late spring are still the backbone of the good times. These are the Structural and the Plate trades, which are flourishing through the railroad buying of cars and engines and the heavy requirements for buildings, bridges and ships for the lakes. As an indication of the volume of business being done the fact may be mentioned that the American Bridge Company alone booked orders for bridges, buildings and structures aggregating 71,000 tons during June. In New York contracts for buildings involving 15,000 tons of Structural Material were placed during the week. Chicago did a good business and has some large work in sight. In the Plate trade mills in the Central West have been forced through sheer inability to make deliveries to transfer work to Eastern mills.

Some good Rail orders have been placed lately, including 15,000 tons with one mill in the Central West and 30,000 tons with an Eastern plant.

The event of the week in the lighter lines has been the adjustment between the American Sheet & Tin Plate Company and the Amalgamated Association of both the Sheet and the Tin Plate scales. The men receded completely from their demands for an advance in wages and accepted substantially the existing scales. One very important point was made, and that is that the clauses relating to restrictions of output were eliminated. This has been a very sore point with those manufacturers whose mills were under union rule.

The rebate of 1½ per cent. in wages on Tin Plates intended to supplant foreign Plates imported under the drawback clauses continues to August 1. After that date it may be restored by the company to the original 3 per cent. rebate if conditions require it.

The settlement of the wages question in these two important branches removes practically the only cloud on the horizon. From a market point of view only a prolonged struggle could have affected values.

There are indications that at least one large consuming interest in the Foundry trade has begun to feel the market for Pig Iron seriously, but that is the exception. The deadlock is really unbroken, and the drift of events seems to favor the buyers, since Southern Iron has weakened further and some smaller interests have accepted the basis of $11 for No. 2 Foundry at Birmingham. The leading interests in all the principal producing sections, however, are abstaining from any attempt to force Pig Iron upon unwilling buyers. It will take some striking event to start the buying movement, some merchants believing that we may drag along in this manner for the whole of this month.

Bids are being opened to-day in this city for a round lot of Cast Iron Pipe. Kansas City has just awarded 6000 tons.

A Comparison of Prices.

Advances Over the Previous Month in Heavy Type, Declines in Italics.

At date, one week, one month and one year previous.

	July 3, 1905.	June 28, 1905.	June 7, 1905.	July 6, 1904.
PIG IRON:				
Foundry Pig No. 2, Standard, Philadelphia	*$16.25*	$16.50	$17.00	$14.50
Foundry Pig No. 2, Southern, Cincinnati	*14.00*	14.00	14.75	11.75
Foundry Pig No. 2, Local, Chicago	*16.00*	16.25	17.00	13.25
Bessemer Pig, Pittsburgh	*14.85*	15.35	15.85	12.25
Gray Forge, Pittsburgh	*14.60*	14.85	15.50	12.00
Lake Superior Charcoal, Chicago	*16.50*	16.50	17.50	14.50
BILLETS, RAILS, &c.:				
Steel Billets, Pittsburgh	*21.00*	21.00	23.00	23.00
Steel Forging Billets, Pittsburgh	*24.00*	25.00	26.00	....
Steel Billets, Philadelphia	*26.00*	26.00	26.50	24.00
Steel Billets, Chicago	*27.00*	27.00	28.00	24.00
Wire Rods, Pittsburgh	*32.00*	32.50	34.00	28.00
Steel Rails, Heavy, Eastern Mill	28.00	28.00	28.00	28.00
OLD MATERIAL:				
O. Steel Rails, Chicago	**12.50**	13.00	12.00	9.50
O. Steel Rails, Philadelphia	**15.25**	15.25	15.00	11.00
O. Iron Rails, Chicago	**17.25**	17.25	17.00	14.00
O. Iron Rails, Philadelphia	*18.00*	18.00	19.00	14.50
O. Car Wheels, Chicago	14.25	14.25	14.25	10.50
O. Car Wheels, Philadelphia	*14.50*	14.50	15.00	11.00
Heavy Steel Scrap, Pittsburgh	*13.50*	13.50	14.50	11.00
Heavy Steel Scrap, Chicago	**12.25**	12.25	12.00	9.00
FINISHED IRON AND STEEL:				
Refined Iron Bars, Philadelphia	1.63½	1.63½	1.63½	1.48½
Common Iron Bars, Chicago	1.50	1.50	1.50	1.30
Common Iron Bars, Pittsburgh	*1.55*	1.55	1.60	1.30
Steel Bars, Tidewater	1.64½	1.54½	1.64½	1.49½
Steel Bars, Pittsburgh	1.50	1.40	1.50	1.35
Tank Plates, Tidewater	1.74½	1.74½	1.74½	1.74½
Tank Plates, Pittsburgh	1.60	1.60	1.60	1.60
Beams, Tidewater	1.74½	1.74½	1.74½	1.74½
Beams, Pittsburgh	1.60	1.60	1.60	1.60
Angles, Tidewater	1.74½	1.74½	1.74½	1.74½
Angles, Pittsburgh	1.60	1.60	1.60	1.60
Skelp, Grooved Steel, Pittsburgh	1.50	1.50	1.50	1.32½
Skelp, Sheared Steel, Pittsburgh	1.55	1.55	1.55	1.32½
Sheets, No. 27, Pittsburgh	*2.15*	2.20	2.20	2.00
Barb Wire, f.o.b. Pittsburgh	2.25	2.25	2.25	2.50
Wire Nails, f.o.b. Pittsburgh	1.80	1.80	1.80	1.90
Cut Nails, Mill	1.80	1.80	1.80	1.75
METALS:				
Copper, New York	15.00	15.00	15.00	12.62½
Spelter, St. Louis	**5.07½**	5.07½	5.05	4.75
Lead, New York	**4.55**	4.55	4.50	4.20
Lead, St. Louis	**4.45**	4.47½	4.40	4.07½
Tin, New York	**30.80**	30.70	29.95	25.60
Antimony, Hallett, New York	**12.00**	11.50	10.25	7.25
Nickel, New York	40.00	40.00	40.00	40.00
Tin Plate, Domestic, Bessemer, 100 pounds, New York	3.74	3.74	3.74	3.64

Chicago.

FISHER BUILDING, July 3, 1905.

This is one of those uncertain markets, full of promise for both buyers and sellers, that one is apt to meet in the midsummer. Buyers read in it lower prices and sellers spell in its halting hieroglyphics a market that shall exceed in price anything that has gone before in 1905. It is quite generally understood in this market that not over 80 per cent. of the Pig Iron and not over 70 per cent. of the finished products for the period extending from July, 1905, to July, 1906, have been bought. Sellers, as a general rule, are more nervous as to the outcome than buyers.

Pig Iron.—While there is no disposition on the part of the larger interests in the South to recede from the $11.50 minimum, there are still a number of smaller furnaces that are making $11.25, and even $11, Birmingham, basis for July and August, and in some cases for September delivery. The weak point in the Pig Iron market seems to be in the South, even though price cutting may have originated among Ohio furnaces, following the failure of the United States Steel Corporation to take its expected allotment in May and June. It is pretty generally understood that while the Coal miners were practically defeated in their strike in the South their endeavor to force higher wages from the operators resulted in a very considerable increased cost of Coal and Coke to the blast furnace operators, so much so that while it was possible a year ago for a Southern furnace to make Iron at $9.50, Birmingham, without losing money, $10.50 to $11 would represent the range of manufacturing cost among Southern furnaces to-day. The market is in a condition where an advance in price is much more likely to provoke orders than a decline, as a decline is taken as a further prolongation of the midsummer weakness, while an advance would be recognized by buyers as marking the

turning point and would be the signal for them to come into the market immediately for their tonnages for a period as far in advance as furnaces would permit. Buyers generally recognize that present Pig Iron prices are low compared with prices for finished products and in relation to general conditions, and their whole effort is to reach the low point before they buy, recognizing as they do that prices will without doubt advance quite materially during the second half of the year. Southern Silveries have taken another drop, bringing them, if anything, a little below the official schedule for Southern Foundry Iron. It is understood by this that the refusal on the part of furnaces to sell Silvery Irons at the usual advance above Foundry for a long period led to an accumulation of Silveries at the furnaces and that makers are constrained to turn this accumulation into money as soon as possible by making concessions to that end. Local Northern furnaces are all in a position where they are financially able to store Iron as long as commercial exigencies warrant. They are correspondingly slow to meet the price on Southern Iron at Chicago, except in the case of such customers as they know to be able to use either Northern or Southern Iron with equal success; $16, delivered Chicago, has been and is being done, but $16.25 to $16.50 is the current market price for all but exceptional cases. A fairly good inquiry is developing in 500, 1000, 1500 and 2000 ton lots, but in the majority of cases these inquiries are looked upon by sellers as being simply feelers, because the average consumer is satisfied thus far to cover actual current requirements by purchases for immediate delivery. Indications are that during the greater part of July this hand to mouth buying will continue, but that probably before September 1 furnaces will have reached a position where they can safely withdraw from the market, with the result that prices will advance rapidly. The following quotations represent current market prices for ordinary lots up to 1000 tons or thereabouts for delivery during July, August and possibly September:

Lake Superior Charcoal	$16.50 to $17.00
Northern Coke Foundry, No. 1	16.50 to 17.00
Northern Coke Foundry, No. 2	16.00 to 16.50
Northern Coke Foundry, No. 3	15.50 to 16.00
Northern Scotch, No. 1	16.75 to 17.25
Ohio Strong Softeners, No. 1	17.30
Ohio Strong Softeners, No. 2	16.80
Southern Silvery, 4 to 6 per cent. Silicon	16.15 to 17.15
Southern Coke, No. 1	15.15 to 15 65
Southern Coke, No. 2	14.65 to 15.15
Southern Coke, No. 3	14.15 to 14.65
Southern Coke, No. 4	13.90 to 14.15
Southern Coke, No. 1 Soft	15.15 to 15.65
Southern Coke, No. 2 Soft	14.65 to 15.15
Southern Gray Forge	13.65 to 13 90
Southern Mottled and White	13.40 to 13.65
Malleable Bessemer	16.25 to 16.50
Standard Bessemer	16.80 to 17.05
Jackson Co. and Ky. Silvery, 6 to 8 % Silicon	18.30 to 18.55
Jackson Co. and Ky. Silvery, 8 to 10 % Silicon	20.30 to 20.55
Alabama Basic	15.15 to 15.65

Billets.—As yet the lower quotations announced in Pittsburgh reports do not seem to have affected the Western market, because Western manufacturers of Forging Billets who are able to make at all prompt delivery are able to secure from $28 to $30, Chicago, in car lots, for base sizes of Forging Billets, with the regular extras for larger and smaller dimensions. It is true that business in Forging Billets is at the minimum and that there is scarcely sufficient trading to make a market.

Rails and Track Supplies.—The most interesting feature of the Rail market is the fact that central Pennsylvania interests booked 15,000 tons for Western delivery, 12,000 tons of which were for the Southwest and the balance for Middle West territory, business being placed of course at $28 a gross ton, f.o.b. mill, plus full freight to point of delivery. Now that the Illinois Steel Company's mills in Chicago are practically out of the market and that the Carnegie mills at Pittsburgh are full of business up to September and October mills further East are beginning to get a share of the business, belated buyers being forced to pay freight from mill, however far it may be, in order to get satisfactory delivery of their rails. Pittsburgh mills have taken a less than usual tonnage during the past week, because they are already so full of business that their deliveries are greatly delayed. Light Section Rails down to 12-lb. Sections are offered at $24 to $27 a gross ton, f.o.b. mill, while 10-lb. and 8-lb. are offered at $28 and $29. Angle Bars are unchanged at 1.40c. to 1.50c. Spikes are rather weak at 1.70c. to 1.75c., f.o.b. mill, in car lots, Eastern mills offering 1.70c. and local mills holding at 1.75c. or above. Track Bolts are quoted at 2.40c. to 2.50c., base, Square Nuts. Store prices on Track Supplies range from 15c. to 25c. per 100 lbs. above car lot mill prices.

Structural Material.—For some technical reason, unexplained, the Fuller Construction Company waived the contract which it originally held on the first section of the Netcher Building, and in the reletting the general contract was placed with John Griffiths & Son, Chicago, who let the steel contract to the Morava Construction Company, amounting to about 4000 tons. This steel is expected to be placed by the contractors with the Carnegie Company. Other sections of the same great dry goods store will be placed later, the aggregate Structural Steel requirements being over 12,000 tons. The Steel work for the Commonwealth Electric Company's plant was let to the Interstate Engineering Company of Cleveland. This will involve both Structural Steel and Plates. Uihlein interests of Milwaukee have just placed an order with the Carnegie Company for 700 tons of Structural Steel for a local enterprise, the construction work being done by A. F. Wagner of Milwaukee. Structural Steel mills are falling behind rather than catching up with the consumptive demand, and six months' delivery is the best promise that can be made nowadays by the leading producer, though three to four months' is promised by lesser interests. Official prices for delivery from mill, f.o.b. Chicago, in car lots, are as follows: Beams and Channels, 3 to 15 inches, inclusive, 1.76½c.; Angles, 3 to 6 inches, ¼-inch and heavier, 1.76½c.; Angles, larger than 6 inches on one or both legs, 1.86½c.; Beams, larger than 15 inches, 1.86½c.; Zees, 3 inches and over, 1.76½c.; Tees, 3 inches and over, 1.81½c., in addition to the usual extras for cutting to exact lengths, punching, coping, bending or other shop work. Store prices on Angles, Beams and Channels range from 2.10c. to 2.50c., according to quantity on hand in store or obtainable from mill.

Plates.—Figures are being asked for by the leading Western shipbuilding interest on a great steel steamer, the quotations averaging $2 a ton higher than they did six or eight weeks ago on Plates. There is no doubt that demand for Plates is greater than the supply, and as the demand seems to be larger in the West than in the East, eastern Pennsylvania mills are becoming greater and greater factors in supplying Western demands because they are able to make deliveries more favorably than is possible with Pittsburgh mills or mills further West. Prices are unchanged and firm, as follows: Tank quality, ¼-inch and heavier, wider than 14 and up to 100 inches wide, inclusive, car lots, Chicago, 1.76½c.; 3-16 inch, 1.86½c.; Nos. 7 and 8 gauge, 1.91½c.; No. 9, 2.01½c.; Sheared and Universal Mill Plates, Tank quality, 6¼ to 14 inches, inclusive, 10c. below these prices; Flange quality in widths up to 100 inches, 1.86½c., base, for ¼-inch and heavier, with the same advances for lighter weights; Sketch Plates, Tank quality, 1.86½c.; Flange quality, 1.96½c. Store prices on Plates are as follows: Tank Plate, ¼-inch and heavier, up to 72 inches wide, 2c. to 2.10c.; from 72 to 96 inches wide, 2.10c. to 2.20c.; 3-16 inch up to 60 inches wide, 2.10c. to 2.20c.; 72 inches wide, 2.35c. to 2.45c.; No. 8 up to 60 inches wide, 2.15c. to 2.25c.; Flange quality, 25c. extra.

Sheets.—The Inland Steel Company operated its galvanizing department long enough to satisfy itself that it was in perfect running order, and then closed down its entire Sheet mill for its annual house cleaning and repairs. How soon the mill will resume operations will depend upon market and labor conditions. There seems to be quite a general movement on the part of Sheet mills, both those belonging to the American Sheet & Tin Plate Company and to independent interests, to close down, independent of any labor entanglement involved in the demand by the Amalgamated Association for higher wages, and prospects are that an exceedingly small tonnage of Sheets will be rolled during the month of July. This period of cessation of activity will permit owners of mills affected by the Amalgamated demands to cast about for nonunion labor. Apparently consumers of Sheets have forecasted the situation as a general thing, and are, as a rule, indifferent as to whether mills roll stock or not during the month of July. If the strike closes a large percentage of the mills beyond July there is every possibility that the excess of demand over supply may result in a strengthening in the price of Sheets. Mill prices are unchanged on car lots and larger, as follows: Blue Annealed, Nos. 9 and 10, 1.86½c.; Box Annealed, Nos. 18 and 20, 2.16½c.; No. 27, 2.36½c.; No. 28, 2.41½c., with the customary differentials between gauges. Store prices are based on a minimum of 2.10c. for No. 10 Blue Annealed, 2.50c. for Nos. 18 and 20 Box Annealed, 2.65c. for No. 27 Box Annealed and 2.75c. for No. 28 Box Annealed. Galvanized Sheets are quoted in car lots from mill at about the following prices, some mills asking a little more and some offering at $1 a ton less: No. 10, 2.46½c.; Nos. 17 to 21, 2.81½c.; No. 27, 3.36½c.; No. 28, 3.56½c. Store prices on Galvanized Sheets are as follows: Nos. 10, 12 and 14 are selling at from 3c. to 3.10c., Nos. 22 and 24 at from 3.05c. to 3.15c., No. 27 at from 3.50c. to 3.65c. and No. 28 at from 3.70c. to 3.95c., with intermediate gauges in proportion and with customary differentials for widths and lengths.

Bars.—Had it not been for the fact that makers of Steel Bars decided to extend some old contracts made on the 1.30c., Pittsburgh, basis, there is no doubt that the advancing price of Scrap would have led to a higher price on Bar Iron. Before these Steel contracts were extended Bar Iron held quite firmly at 1.55c., with some makers asking and receiving 1.60c., base, Chicago, car lots; but with the quite general extension of 1.30c., Pittsburgh, contracts for Steel Bars it became necessary for Western makers of Bar Iron to meet this price as nearly as possible for such

of their customers as could use either Iron or Steel. The result of this has been that Bar Iron is quoted by Western mills at from 1.50c. to 1.55c., basis, Chicago. Hoops are unchanged at 1.81½c. rates, full extras. Soft Steel Angles and Shapes, 1.76½c., half extras, and Hard Steel Angles and Bars at about 10c. below the price of Soft Steel. In store prices Steel Bars and Bands are being held at a minimum of 1.85c., base, half extras; Steel Angles and Shapes, 1.95c., half extras, and Soft Steel Hoops, 2.20c., full extras, with 5c. to 10c. higher than the minimum prices named for small quantities from store.

Merchant Steel.—It is now known that almost all of the large users of Agricultural Steel in such sections as Chicago, South Bend and Moline have long since made their annual contracts for 1905 and 1906 delivery and that it is only the small manufacturers throughout the country who are delaying their purchases because of the hope of securing lower prices. This is much the same condition that existed a year ago, which resulted in the failure on the part of the small manufacturers all over the country to secure deliveries this spring, causing considerable loss to themselves. Whether this condition will be repeated next spring or not of course is problematical, but it is sure that the firms who have their orders in first will secure the first shipments and that there is more likelihood of an advance in price than a decline in most lines of Agricultural Steel. Current prices are unchanged, as follows, officially at least: Smooth Finished Machinery Steel, 1.91½c.; Smooth Finished Tire, 1.86½c.; Flat Sleigh Shoe, 1.71½c.; Concave and Convex Sleigh Shoe, 1.86½c.; Cutter Shoe, 2.40c.; Toe Calk Steel, 2.21½c.; Railway Spring, 1.86½c.; Crucible Tool Steel, 6½c. to 8c.; special grades of Tool Steel, 13c. and up; Shafting, 50 per cent. discount in car lots and 45 per cent. in less than car lots in base territory.

Merchant Pipe.—The feeling is gaining ground that the official price of Pipe on the part of the leading producer will be reduced to 77 per cent. discount, Pittsburgh, to consumers and 78 per cent. discount to jobbers before long, instead of endeavoring to continue the fiction of the higher "official" prices that have been quoted to the trade papers recently. This will make the price to consumers two points better, or $4 a ton lower than the following "card" prices, which are still named for publication: Black Steel, 73.35; Galvanized Steel, 63.35; Black Iron, 71.85; Galvanized Iron, 61.85, with the customary differentials for larger and smaller diameters and for X and XX strong.

Boiler Tubes.—As there seems to be no longer an attempt on the part of the leading producer to publish a differential between consumers' and jobbers' discounts, we quote the following open prices either to consumers or jobbers for base sizes, f.o.b. Chicago, in car lots from mill: Steel Tubes, 62.35; Iron, 51.35; Seamless, 50.85. Store prices are, nominally at least, unchanged, as follows:

	Steel.	Iron.	Seamless.
1 to 1½ inches	40	35	42½
1¾ to 2¼ inches	50	35	35
2½ inches	52½	35	30
2¾ to 5 inches	60	47½	42½
6 inches and larger	50	35	..

Cast Iron Pipe.—An order has just been booked by the leading producer from Kansas City, Mo., for 6000 tons of Water Pipe for delivery from July, 1905, to July, 1906, as against 8000 tons booked by the same interest for delivery the year previous. A number of smaller towns in the West have also given orders to the same interest for lots ranging from 200 to 500 tons. The following quotations must not be understood to be prices paid on large municipal contracts, but rather those quoted on car lots, 100-ton lots and other relatively small tonnages to railroads and municipalities. The prices are as follows: Water Pipe, 4-inch, $29; 6, 8 and 10 inch, $28; 12-inch and larger, $27.50, per net ton, with $1 extra charged for Gas Pipe. Orders were taken by the leading producer recently for the following lots: Manistique, Mich., 800 tons; Liberty, Mo., 800 tons; Moline, Ill., 350 tons; La Harpe, Kan., 300 tons.

Old Materials.—Strangely enough, in face of the rapid decline in the price of Pig Iron and the general cessation of buying in Finished Materials, the large dealers who are understood to control the Scrap situation are buying heavily at prices which they are forcing upward. The only list of consequence that was issued since last report was that of the Chicago & Northwestern Railway, and it contained no Rails or Wheels, so the price of Rails and other gross ton products are unchanged; but the advance in prices on the net ton commodities reflects the higher prices received by this road as compared with the figures secured by the Burlington and St. Paul roads last week:

Old Iron Rails	$17.25 to $17.50
Old Steel Rails, 4 feet and over	13.00 to 13.50
Old Steel Rails, less than 4 feet	12.50 to 13.00
Heavy Relaying Rails, subject to inspection	22.25 to 22.75
Heavy Relaying Rails, for side tracks	19.50 to 20.00
Old Car Wheels	14.25 to 14.75
Heavy Melting Steel Scrap	12.25 to 12.50
Frogs, Switches and Guards	12.50 to 13.00
Mixed Steel	10.00 to 10.50

The following quotations are per net ton:

Iron Fish Plates	$16.00 to $16.25
Iron Car Axles	20.75 to 21.00
Steel Car Axles	15.50 to 16.00
No. 1 Railroad Wrought	14.00 to 14.50
No. 2 Railroad Wrought	13.00 to 13.50
Shafting	15.00 to 15.50
No. 1 Dealers' Forge	10.00 to 10.50
Wrought Pipes and Flues	10.50 to 10.75
No. 1 Cut Busheling	9.50 to 10.00
Iron Axle Turnings	10.00 to 10.25
Soft Steel Axle Turnings	9.75 to 10.00
Machine Shop Turnings	9.75 to 10.00
Cast Borings	7.50 to 8.00
Mixed Borings, &c	7.50 to 8.00
No. 1 Mill	8.75 to 9.25
Country Sheet	7.00 to 7.50
No. 1 Boilers, cut to Sheets and Rings	9.50 to 10.00
No. 1 Cast Scrap	13.50 to 14.00
Stove Plate and Light Cast Scrap	9.50 to 10.00
Railroad Malleable	12.25 to 12.50
Agricultural Malleable	11.75 to 12.00

Metals.—Business is very quiet and prices are unchanged. We quote Pig Tin 31½c. to 32c. in car lots and 32c. to 32½c. in small lots. Spelter, 5¼c. for car lots and 5½c. to 5⅝c. for small lots. Casting Copper is 14⅞c. to 15c.; Lake, 15c. to 15⅛c. in car lots, with ¼c. to ½c. higher for small lots. Lead is quoted in 50-ton lots at 4.55c., in car lots at 4.60c., and 5c. to 5.25c. in small lots. The new Sheet Zinc schedule is based on $7, La Salle, for car lots of 600-lb. casks; car lots, Chicago, are sold on the basis of $6.75, with small lots selling at from $7 to $7.50 per 100 lbs. Prices of Old Copper and Brass are as follows: Copper Wire, 13¼c.; Heavy, 13c.; Copper Bottoms, 12c.; Copper Clips, 12¾c.; Red Brass, 11¾c.; Red Brass Borings, 9¾c.; Yellow Brass, Heavy, 8½c.; Yellow Brass Borings, 7⅞c.; Light Brass, 7c.; Lead Pipe, 4¼c.; Tea Lead, 3.85c.; Zinc, 4c.; Pewter, No. 1, 19¼c.; Block Tin Pipe, 25c.

Coke.—Higher cost of production is leading to a strengthening in price of Coke and Foundry quality is pretty generally held at a $2.50 minimum in the Connellsville district. Furnace Coke is sold at from $1.85 to $2 at the ovens. Wise County, Va., Cokes are held at an average of $2 at the ovens for Foundry quality and $1.75 for Furnace. Freight to Chicago from Pennsylvania and West Virginia districts, $2.65; from Wise County and other L. & N. operations, $2.25.

Pittsburgh.

PARK BUILDING, July 5, 1905.—(*By Telegraph.*)

Pig Iron.—There is a better inquiry for Pig Iron, indicating that stocks of some consumers are getting low and they are feeling the market for prices. From the facts that there has been practically no buying of Pig Iron for two months and that consumption has gone steadily ahead at a heavy rate, it is fair to assume that some consumers will have to come into the market as buyers before very long. For this reason it is believed that before July is over there will be a better buying movement, but no improvement in prices can be expected until the heavy stocks that have accumulated have been worked off. Bessemer and Basic Iron remain nominally at $14.50, Valley furnace, or $15.35, Pittsburgh, with reports of sale as low as $14, Valley furnace. The fact is that there has been so little buying of Pig Iron for two months that it is hard to tell what prices would be made for large tonnage and on a firm offer. Northern No. 2 Foundry is held at about $14.50, Valley furnace, and a few small lots have been sold at this price. There is no demand for Gray Forge, which is held at $13.75 to $14, Valley, or $14.60 to $14.85, Pittsburgh.

Steel.—The fact that the Sheet and Tin Plate scales have been settled probably means a better demand for Billets, Sheet and Tin Bars, as the mills will be idle only long enough to make necessary repairs. Bessemer and Open Hearth Billets are about $22, Sheet and Tin Bars, in random lengths, $23.50, and Cut Bars $24, maker's mill. On long time contracts buyers would be named official price for Billets, which is $21, and for Sheet and Tin Bars, which is $23, maker's mill. Forging Billets are held at $24 to $26, depending on carbons.

(*By Mail.*)

At this writing no settlement of the Sheet and Tin Plate scales for the year commencing July 1 has been reached, but indications are that the scales will be arranged within the next day or two. The wage committees of the American Sheet & Tin Plate Company and the Amalgamated Association met in conference here last Wednesday and the former made a flat refusal of any advance in wages, but, on the contrary, demanded the old scale, also the elimination of output in Sheet and Tin Plate mills and other changes in the foot notes, including a rebate of 3 per cent. on Tin Plate for export instead of 1½ per cent., as under the old agreement. The demands made were a complete surprise to the officials of the Amalgamated Association, as they went into the conference fully expecting to secure at least a slight advance in wages and to retain the limit of output. The Amalgamated officials agreed to allow the American Sheet

& Tin Plate Company to continue to operate its mills until a settlement was reached, but this offer was declined and all the union Tin Plate mills of the concern were shut down on Friday night, June 30. The Amalgamated Association appointed a subcommittee to meet the officials of the company in another conference, and this is in session at this writing, with chances of the Amalgamated Association granting all the demands made. The Amalgamated Association knows it would be folly to engage in a strike at this time and will do all in its power to avoid one. It is not improbable, therefore, that the Sheet and Tin Plate scales will be arranged before this report reaches our readers.

General conditions in the Iron trade continue very quiet, which is always the case at this season of the year. A great many plants, including the Sheet and Tin Plate mills, shut down on June 30 for inventory and repairs, and while some will get started within a week or two others will be idle during the greater part of July. In the meantime there is very little new buying, but it cannot be said that the market is in any way demoralized. It is true prices of Pig Iron and Steel have gone off to some extent, also Sheets and Tin Plate, as well as Scrap and Coke, but the other lines of Finished Iron and Steel are reasonably firm. Bessemer and Basic Pig Iron is nominally $14.50, Valley furnace, with reports of sales for prompt shipment at $14, Valley furnace. Northern No. 2 Foundry is $14.50, Valley furnace, with practically no buying. The same is true of Gray Forge, which is about $14, Valley furnace, or $14.85, Pittsburgh. On a firm offer it is probable the prices given above on Pig Iron would be materially shaded. The Steel market is rather quiet, which is natural with so many of the Finishing mills closed, but prices are fairly strong. Bessemer and Open Hearth Billets are $22 and Sheet and Tin Bars $23.50 to $24, maker's mill. There have been no important changes in prices of Finished Iron and Steel, which are fairly strong.

Ferromanganese.—There is some inquiry for Ferro in small lots, but the large consumers are covered for some time ahead. We quote foreign and domestic Ferro at $49.50 to $50, delivered.

Rods.—The market is very dull and we do not hear of any sales. We quote Bessemer and Open Hearth Rods at $32 and Chain Rods $33 to $34, maker's mill.

Rails.—There has been a good run of small orders, but no large contracts have recently been placed. The leading Rail mills are said to be filled up for the next several months. We quote Standard Sections at $28, at mill. Light Rails are in only fair demand and prices are weak. We quote at $22.50 to $25, depending on weight.

Skelp.—There is practically no demand and most of the Skelp mills are closed for inventory and repairs. We quote Bessemer Grooved Skelp at 1.50c. to 1.55c. and Open Hearth 1.55c. to 1.60c., with $1 advance for Sheared. Grooved Iron Skelp is about 1.60c., and Sheared 1.67½c. to 1.70c., maker's mill. On a firm offer the above prices would no doubt be shaded.

Plates.—A good deal of new tonnage in Plates is being placed and the mills have all the work they can turn out for the next two or three months, while on certain sizes of Plates Carnegie Steel Company is said to be sold up to October 1 or longer. Indications are that the Plate mills will have plenty of work all through the summer months. The Carnegie Company has transferred some of its Plate orders to Eastern mills, being unable to make deliveries wanted. Prices are very firm and we quote: Tank Plates, ¼ inch thick, 6¼ to 14 inches wide, 1.50c., base; over 14 inches wide and up to 100 inches in width, 1.60c., base, at mill, Pittsburgh. Extras over the above prices are as follows:

	Extra per 100 pounds.
Gauges lighter than ¼-inch to and including 3-16-inch Plates on thin edges	$0.10
Gauges No. 7 and No. 8	.15
Gauge No. 9	.25
Plates over 100 to 110 inches	.05
Plates over 110 to 115 inches	.10
Plates over 115 to 120 inches	.15
Plates over 120 to 125 inches	.25
Plates over 125 to 130 inches	.50
Plates over 130 inches	1.00
All sketches (excepting straight taper Plates varying not more than 4 inches in width at ends, narrowest end being not less than 30 inches)	.10
Complete Circles	.20
Boiler and Flange Steel Plates	.10
Marine, "A. B. M. A." and ordinary Fire Box Steel Plates	.20
Still Bottom Steel	.30
Locomotive Fire Box Steel	.50

Shell Grade of Steel is abandoned.

TERMS.—Net cash 30 days. For anticipated payments a maximum discount may be allowed at the rate of 6 per cent. per annum and for a longer time than 30 days interest shall be charged at the same rate per annum. Invoices paid within ten days from date thereof, discount of ½ of 1 per cent. is allowable. Pacific Coast base, 1.40c. f.o.b. Pittsburgh, with all rail tariff rate of freight to destination added, no reduction for rectangular shapes 14 inches wide down to 6 inches of Tank, Ship or Bridge quality.

Structural Material.—The business of the American Bridge Company in June amounted to 71,000 tons, which can be regarded as a banner month. No large orders have been placed in this district, but a great deal of large work is in sight in the East. Among these is the Manhattan Bridge, about 50,000 tons; also bridges in a number of the Eastern cities. The Structural concerns are filled up with work for the next two or three months and are having delays in getting deliveries from the mills, particularly on Beams and Channels of the smaller sizes. We quote: Beams and Channels, up to 15-inch, 1.60c.; over 15-inch, 1.70c.; Angles, 3 x 2 x ¼ inch thick up to 6 x 6 inches, 1.60c.; Angles, 8 x 8 and 7 x 3½ inches, 1.70c.; Zees, 3-inch and larger, 1.60c.; Tees, 3-inch and larger, 1.65c. Under the Steel Bar card Angles, Channels and Tees under 3-inch are 1.60c., base, for Bessemer and Open Hearth, subject to half extras on the Standard Steel Bar card.

Sheets.—While no settlement of the Sheet scale has yet been made the chances are it will be arranged within the next few days, the new scale to be the same as the one that expired on June 30. The demand of the Amalgamated Association for an 18 per cent. advance in Sheet mill wages has been turned down by the American Sheet & Tin Plate Company, which will insist upon the present scale and will no doubt get it. A number of the leading union Sheet mills closed on June 30 until the scale is settled and to make inventory and repairs. Demand for Sheets is light, but specifications on contracts are coming in fairly well. Prices are without important change, but are only fairly strong. We quote: Black Sheets, box annealed, one pass through cold rolls, No. 24 gauge, 2.05c. to 2.10c.; No. 26, 2.15c. to 2.20c.; No. 27, 2.15c. to 2.20c.; No. 28, 2.25c. to 2.30c. We quote Galvanized Sheets as follows: Nos. 22 and 24, 2.75c. to 2.85c.; Nos. 25 and 26, 2.95c. to 3.05c.; No. 27, 3.13c. to 3.23c.; No. 28, 3.35c. to 3.45c. We quote No. 28 Gauge Painted Roofing Sheets at $1.65 to $1.75 per square, and Galvanized Roofing Sheets, No. 28 gauge, at $2.85 to $2.95 for 2½-inch corrugation. Jobbers charge the usual advances over above prices for small lots from store.

Iron and Steel Bars.—A fair amount of new tonnage is being placed in Iron and Steel Bars and consumers are specifying very liberally on old contracts. Efforts of the larger consumers to get the Steel Bar mills to reduce prices from the 1.50c. basis have so far been without avail, the mills advising us they are adhering strictly to the price of 1.50c. on all new business. It is probable that when contracts now held by consumers expire they will pursue the policy of buying only for actual needs in preference to making large contracts at the above price. Prices on Iron Bars are fairly strong and 1.55c., Pittsburgh, seems to be minimum. We quote Common Iron Bars at 1.55c. to 1.60c., Pittsburgh; Steel Bars are 1.50c., base, for carloads and larger lots, but this price is shaded by some of the jobbers, who have large stocks of Bars, bought when prices were 1.30c. to 1.40c., at mill.

Hoops and Bands.—A small amount of new tonnage is being placed, but the mills are running mostly on contracts made by consumers when prices were lower and on which they are specifying very freely. We quote Steel Hoops at 1.65c.; Bands, 1.50c., with usual extras, and Cotton Ties, 85c. per bundle for 3000-bundle lots and over.

Tin Plate.—Practically no new business is being placed in Tin Plate and many of the larger mills are closed awaiting adjustment of the wage scale and to make repairs. Stocks of Tin Plate continue heavy and some of the jobbers continue to shade mill prices about 10c. a box. We quote Tin Plate at $3.50, base, f.o.b. Pittsburgh, terms 30 days, or 2 per cent. off for cash in 10 days. As stated above, some of the jobbers are shading this price about 10c. a box.

Spelter.—The Spelter market is very dull and prices continue weak. We quote prime grades of Western Spelter at 5.05c., St. Louis, equal to 5.17½c., Pittsburgh.

Merchant Pipe.—General conditions in the Pipe trade are quiet, as they always are at this season of the year. On the larger sizes, running from 6-inch up to 10-inch, the mills are well filled up for the next several months. Discounts to jobbers in carloads, which are shaded two points, or $4 a ton, by the outside mills are as follows:

Merchant Pipe.

	Steel.		Iron.	
	Black. Per cent.	Galv. Per cent.	Black. Per cent.	Galv. Per cent.
⅛ and ¼ inch	67	51	65	49
⅜ and ½ inch	71	59	69	57
¾ to 6 inches	75	65	73½	63½
7 to 12 inches	70	55	68½	53
Extra strong, plain ends.				
⅛ to ⅜ inch	60	48	58	46
½ to 4 inches	67	55	65	53
4½ to 8 inches	63	51	61	49
Double extra strong, plain ends, ¼ to 8 inches	56	45	54	43

Boiler Tubes.—Demand for Boiler Tubes continues heavy, and the leading mills are some weeks behind in deliveries. Prices are firm, discounts in carload being as follows:

Boiler Tubes.

	Iron.	Steel.
1 to 1½ inches	41	44
1¾ to 2¼ inches	41	56
2½ inches	46	58
2¾ to 5 inches	53	64
6 to 13 inches	41	56

Coke.—The Coke trade continues exceedingly dull in demand and almost every day additional ovens are being blown out. The Frick Coke Company has blown out about

2000 ovens and the W. J. Rainey interests about 1000 ovens. Some of the smaller Coke plants are running five days a week and others only four. Output of the Upper and Lower Connellsville regions last week showed a large falling off, amounting to about 340,000 tons. Strictly Connellsville Furnace Coke for prompt shipment is offered at $1.75 a ton and 72-hour Foundry at $2.35 a ton at oven. For balance of the year delivery Connellsville Furnace Coke was held at $1.90 to $2 and 72-hour Foundry at $2.40 to $2.50 a ton at oven. Outside makes of Furnace Coke are offered as low as $1.50 for Furnace and $2 to $2.10 for Foundry at oven.

Iron and Steel Scrap.—As noted last week, the low prices ruling for Scrap are attracting consumers and there is more inquiry than for some time. Dealers are inclined to hold their Scrap for higher prices, as they believe the market will soon show improvement. We quote: Heavy Melting Scrap, $13.50 to $13.75; No. 1 Wrought Scrap, $15.50; Cast Iron Borings, $7 to $7.50; Cast Steel Scrap, $13.50 to $14; Wrought Iron Turnings, $9.50; Bundled Sheet Scrap, $12; Old Steel Rails, short pieces, $13.50; long pieces, $14, all in gross tons, f.o.b. cars Pittsburgh. We do not hear of any recent sales of Scrap in this market.

The L. K. Hirsch Company, dealer in Pig Iron, Steel and Old Rails, has removed its offices from the Farmers Bank Building to rooms 917-918-919 Frick Building, Pittsburgh.

Philadelphia.

FORREST BUILDING, July 3, 1905.

It might almost be said that the half year just closed has been the most extraordinary the Iron and Steel trades have ever known. But so many extraordinary things have happened within the past five or six years that the trade are not much surprised at anything that may happen. Still it is somewhat remarkable that the demand for Pig Iron during the first quarter was the largest ever known, while at the close of the second quarter there is hardly any demand at all, although conditions have suffered no impairment whatever. The apparent explanation is that purchases during the first quarter covered consumers' requirements on an average to the end of the third quarter and that the demonstrated capacity for production prevented the scarcity of Iron and the advance in prices which had generally been figured upon; consequently consumers are running to the other extreme and seem inclined to let all their contracts run out before making renewals. This lack of demand is depressing prices to the lowest figures of the entire year, averaging a decline of from $1 to $2 per ton from the opening quotations at the beginning of the year. Consumption has been no disappointment, except in one or two lines, and it is believed that the average will equal if not surpass that of any similar period on record. It is a curious feature, therefore, that with conditions as favorable as ever known business drags and prices are weak, even at the decline above named.

Of course it is impossible to say when things will change, but they certainly will change, and it is fairly certain that they will change for the better, but the present feeling must run itself out before consumers take hold again. Fortunately actual consumption is not at a standstill, so that every day brings the buying movement so much the nearer. Feeling in regard to prices must therefore give way to actual needs, and that will no doubt be the signal for a general movement, as consumers are nearly all in the same boat.

The question of prices is another matter entirely. It is too soon to say what level they will start from or to say how far they will recover, but as the actual average cost of production is said to be $16 to $16.50, Philadelphia delivery, for No. 2 X Foundry, they should work up pretty close to what they were some time ago; but that will, of course, depend upon how much the curtailment in production has been and how the demand may develop.

During January, February and March prices were steady and showed hardly any change during the entire period. During April, May and June, however, there was a gradual sagging toward lower figures, and while the apparent decline is not much over $1 per ton the actual decline is more than that, because there is hardly any market at to-day's prices, which are almost nominal and apply mostly to carloads and other small lots.

Mill Irons have been specially dull, as the demand for Skelp and other rolling mill products has been unusually light. High grade Mill Irons, however, have been well taken at comparatively good prices, but ordinary and low grade Irons have sold at extremely low figures, and at the moment there is hardly any market for them unless around $14, delivered. Not much business is expected until after the monthly furnace report is out, and that may perhaps furnish a stimulus for renewed activity.

The market for Finished Material is in relatively better condition than that for raw materials. Mills have had a good run of business during the entire half year, and prices have been fairly satisfactory and with very slight changes in quotations. At the moment there is not much new business, but by the time the mills are ready to start up it is believed that there will be a good demand, as it is pretty well assured that consumption will be very large during the last half of the year. Prospects are excellent, and if there is any failure to respond it will be because of conditions not yet developed nor expected. Prices are steady, although fractionally below the highest during the half year.

The market for Scrap Material has been one of the hardest to follow that has ever been known. At one time there seemed to be no end to the demand and no top to prices, while at a later date, particularly during May and June, there appeared to be no market and no settled prices for anything. During the past few days there have been some indications of a change and consumers are paying a trifling advance, though holders talk considerably more money; but whether they will get it or not remains to be seen, although in the meanwhile the market seems to be a little stronger.

(*By Telegraph.*)

PHILADELPHIA, PA., July 5, 1905.—The holidays have cut into business so much that comparatively little has been done since last week. There is a better feeling, however, and from the number of inquiries that have been made it looks as though buying will be quite heavy within a very short time. Prices are easier at a recession of about 25c. per ton on all grades of Pig Iron, but there is an impression that the market is now very close to rock bottom prices. Finished Material is quiet at unchanged prices, but the suspension of work at the mills will probably help the market, as some mills are closed for one week, others for two weeks, cutting off a considerable tonnage from the regular output. Scrap maintains a better tone, but there is no improvement in prices, and the dealers are taking most of the low priced lots when they have the opportunity.

Birmingham.

BIRMINGHAM, ALA., July 3, 1905.

After a long wait for it, which confirmed the old saying that "hope deferred maketh the heart sick," the buying wave has hove in sight, and the skirmishing mentioned last week as being in progress has developed into attacks that while so far cannot be designated as more than mild, resulted in more business than has been concluded in one week for some time and give promise of a material increase in the immediate future. The business concluded has not been in large lots, but the growth of medium and small lots has been very noticeable.

The market is still very hard to quote correctly. The weeding out of lots of an irregular and heterogeneous character still continues and, until the market is rid of them, quotations will continue to be irregular and unsatisfactory and in many cases misleading. It is a well-known fact that a crop of poor wheat pulls down the price of the good to its level. In the Iron trade the nondescript Iron that is offered is, as to price, a detriment to the value of that which answers full requirements of grades. The attention of your correspondent has been called to certain lots that were sold to carry certain percentages of constituent elements but which would not meet grade requirements. But the sales were credited to the grades and the reports were used to influence a decline in market values. They were analysis sales, but shy of grade requirements. They were sold on their merits at concessions from grade prices, but credited to the grade.

There was a good deal of business declined at the figures current in buying markets as prevailing here and there has been a very fair business done at a material advance over these current reports of the market. The most of the business done has been on the basis of $12 for No. 2 Foundry, and it is safe to say that it cannot now be bought for less. There were some sales as low as $11.50, basis, for No. 2 Foundry during the week. Every effort has been made, without success, to verify the statement that Iron sold during the week at a $11.25, basis, for No. 2 Foundry. The statement is considered here only as hot air.

Some large buyers, only a few in number as yet, are in the market looking for soft spots and finding some differences as to values between themselves and the sellers. One inquiry is on the market for 10,000 tons. This heads the list as to magnitude. In three offices your correspondent footed up the inquiries for the morning and found the aggregate to be 15,000 tons. He also ascertained that some who have been buying from hand to mouth are now increasing their orders, as if feeling their way to larger purchases. There was a slight business done on basis of $11.75 for No. 2 Foundry, and both inquiry and demand have increased for last half of year delivery. The desire to anticipate deliveries yet prevails, and some cases were under consideration for immediate delivery when they did not mature until September.

Down at Bessemer the Tennessee Company has accumulated enough Coke and has secured sufficient labor to undertake to put two more of its furnaces in commission. This makes the company full handed at Bessemer and Ensley City.

The Pipe works are running steadily, but mostly on uncompleted orders. The new business coming in is not of

much moment and prices are quoted at $22 to $24, depending upon size of Pipe wanted.

There is nothing of interest to say of the Steel mill. It is jogging along under a load of business that carries it into the coming year very satisfactorily as to profits. Improvements are constantly being made in its efficiency and its capacity is being taxed to the limit of prudence.

The Scrap Iron market is reported by dealers to have improved very much during the week, both as to inquiry and demand, and on some items there is an advance asked. Quotations are as follows:

Stove Plate	$8.50 to $9.00
Heavy Castings	10.50 to 10.75
Old Steel Rails	12.50 to 13.00
Old Iron Rails	17.00 to 18.00
Open Hearth Steel Scrap	12.50 to 13.00
Iron Car Axles	16.00
Steel Car Axles	13.50 to 14.00
Old Car Wheels	14.00 to 15.00
Relay Light	22.00 to 24.00
Relay Heavy	24.00 to 25.00
Railroad Heavy Wrought	15.00 to 16.00

There has been no change in the situation as regards Coke and Coal. The demand for the former continues active and the price is now held at $4, with a possibility of a slight paring when circumstances favor. The reports as to the mining of Coal are very optimistic. At some of the Pratt mines, near Ensley, where they have introduced modern appliances in mining Coal, they are exceeding the records of any period since the strike was inaugurated. In addition to this they are still increasing their complement of miners by importations from Pennsylvania and other mining centers, and are getting good results right along. More arrived this week and they will be followed by others as accommodations are prepared for them. In the mining of its Ore, the Tennessee Company is making the same progress in results. At its Reeder mines, where it installed improved equipment for mining, the output has been almost doubled. If it attains the same results at its other mines it will be the leader not only in output, but its limit of cost will compare favorably with any interest in this field.

The Crane Company, which bought out the business of the Milner-Kettig Company, bought last week a property located on the Belt Railroad, on which it will erect a plant for the making of Iron Pipe, Brass and Iron Valves and a general line of furnace and milling supplies. The idea is to make this city a distributing point for these supplies and save the freight on both the raw and the manufactured product. The plant running with full force will employ 3000 men.

A company has been incorporated to finance and build the new Union Depot here. G. B. McCormack is president and the name of the company is the Birmingham Terminal Company. At the proper time it will issue bonds for the building of the depot. The parties in interest and who will use the depot are the Southern Railway, the Alabama Great Southern, the Seaboard Air Line, the Frisco and the Central of Georgia. The most complete and convenient depot building in the South, sufficiently commodious to meet the requirements of coming generations, is promised.

Cleveland.

CLEVELAND, OHIO, July 3, 1905.

Iron Ore.—There has been some talk of late of new purchases of Iron Ore for delivery during the remainder of this year, but consumers are not sure enough of their ground to place any very large orders. However, it is believed quite a little more Ore is to be bought. Prices remain nominally at $3.75 for Bessemer Old Range, $3.50 for Bessemer Mesaba, $3.25 for non-Bessemer Old Range and $3 for non-Bessemer Mesaba, all f.o.b. Lake Erie ports. The June movement down the lakes will probably exceed 4,500,000 tons. Lake boats are plentiful. Rates remain at 75c. from Duluth, 70c. from Marquette and 60c. from Escanaba.

Pig Iron.—The best indications continue to center in Basic and Malleable trades. The buying of Basic is especially promising. No large contracts have been closed, but inquiries are up for about 20,000 tons. In Malleable some fair sized orders were closed in the past week. The market is quotable at $14.75 to $15 in the Valleys for both Irons, although it is understood that good offers might easily put the price to $14.50. There is but little stir in the Bessemer market and any price quoted would be purely nominal. The Foundry trade seems to show a little better tone. It is apparent, however, that the absence of new orders is giving some of the furnaces concern. The furnaces with light bookings are disposed to shade prices below $15 in the Valleys, though with others it is questionable if any Iron could be bought for advance delivery for less than $15 for No. 2. The Southern furnaces are still bidding for business in this territory at $11.75 for No. 2, Birmingham, with reports indicating that some business might go as low as $11.50 for No. 2, to which would have to be added $3.85 freight rate to make the Cleveland quotation. The Coke situation is steady. The best grades of 72-hour Foundry Coke are selling for $2.50 at the oven, and Furnace Coke at $2 at the oven. Some producers get a little higher figure.

Finished Iron and Steel.—The closing of most of the Bar Iron mills in this territory had a strengthening tendency on prices during the past week. It became known, however, that the Republic mills only intend to close long enough for an inventory and will resume operations the latter part of this week or the first of next. This removed some of the stress. The other mills in some instances will remain idle longer for urgent repairs. It does not appear that trade conditions will cause the mills to close to limit the output, since the Western mills have virtually retired from the market as disturbing factors. We continue to quote 1.50c., at the mill. The buyers of Bar Steel continued to pursue the policy noted heretofore. The smaller consumers are covering, but the agricultural implement manufacturers have not come into the market. Prices hold at 1.50c. for both Bessemer and Open Hearth Steel. The placing of another boat with a lake shipyard in the past week is understood to be only the beginning of new buying of ships. This movement, however, has been anticipated in these columns. The demand from the Cleveland building contractors is also increasing. Several new business blocks are in contemplation and also some factories. Buying of Structural Material therefore promises to exceed the record from this territory this year. The market is strong, with prices holding steady at 1.60c., Pittsburgh. The Plate trade is also stronger. The improvement in the Sheet trade continues, although there has been something of the holiday spirit this past week. Indications point strongly to a revival during the middle of the month. Prices remain steady, most of the business being out of stock. Quotations continue to be, for No. 10 Blue Annealed, 2.15c. out of stock and for No. 28 one pass cold rolled, 2.65c. out of stock. Galvanized Sheets out of stock are based on 3.65c. for No. 28. There is a decided improvement in the Rail trade, with tractions free buyers of Standard Rails. Several good contracts are still in abeyance, with prospects that most of the shipments on orders recently placed and in contemplation will be wanted between October 1 and March 1.

Old Material.—The market has been dull, with little being done. Prices are nominal, as follows, all gross tons: Old Steel Rails, $13.50 to $14; Old Iron Rails, $20 to $21; Old Car Wheels, $15 to $15.50; Heavy Melting Steel, $13.50. All net tons: Cast Borings, $7 to $7.50; No. 1 Railroad Wrought, $14 to $14.50; No. 1 Busheling, $12; Iron Car Axles, $21 to $22; No. 1 Cast, $12.50 to $13; Stove Plate, $8.50 to $9; Iron and Steel Turnings and Drillings, $9.

Cincinnati.

FIFTH AND MAIN STS., July 5, 1905.—(*By Telegraph.*)

Pig Iron.—The tone of the market is weak. There appears to be a slight improvement in inquiry, but no special development in sales has been the result. It is apparent that as the time draws near when consumers must necessarily make their wants known in order to keep in close touch with the situation they very naturally send forth inquiries which may be *bona fide* or not as the case may demand. There has been an improvement in the buying movement in a small way, reports showing more sales in one and two carload lots, for quick delivery. Buyers, as a rule, however, come into the market without naming the tonnage desired and then content themselves with buying merely enough for present emergencies. From all indications it seems impossible that this state of affairs shall continue for any prolonged period, and a radical change is expected before the close of the present month, as a large percentage of the heavy consumers are not covered longer. Rumor has it that during the week one sale was made below $11.25, Birmingham basis, for No. 2, but in our judgment the facts do not warrant a less figure than $11.25. This, however, is the established schedule, although the foundation is apparently settling until it leans like the famous tower of Pisa, yet without its equilibrium. We are advised of one sale of 300 tons to a concern in northern Ohio on an $11.25 basis and one sale of Northern No. 3 Foundry of 500 tons, Pittsburgh delivery, on a $14.50 basis, Valley furnace, for No. 2. Malleable inquiries are said to be better, and several sales have been made during the week. Freight rates from Hanging Rock district to Cincinnati are $1.15, and from Birmingham $2.75. We quote, f.o.b. Cincinnati, as follows:

Southern Coke, No. 1	$14.50 to $14.75
Southern Coke, No. 2	14.00 to 14.25
Southern Coke, No. 3	13.50 to 13.75
Southern Coke, No. 4	13.00 to 13.25
Southern Coke, No. 1 Soft	14.50 to 14.75
Southern Coke, No. 2 Soft	14.00 to 14.25
Southern Coke, Gray Forge	13.00 to 13.25
Southern Coke, Mottled	12.50 to 12.75
Ohio Silvery, No. 1	19.25 to 19.50
Lake Superior Coke, No. 1	16.15 to 16.40
Lake Superior Coke, No. 2	15.65 to 15.90
Lake Superior Coke, No. 3	15.15 to 15.40

Car Wheel and Malleable Irons.

Standard Southern Car Wheel.....$18.25 to $18.50
Lake Superior Car Wheel and Malleable 18.00 to 18.50

Coke.—A fair sprinkling of business is reported and the general situation is somewhat improved. Consumers as a rule, however, seem in no hurry to make contracts for the remainder of the year, apparently delaying until they feel satisfied that the bottom has been reached. We quote the best grades of Connellsville Foundry from $2.25 to $2.50, f.o.b. ovens.

Plates and Bars.—The demand for Finished Material is still active and a large number of specifications in the Structural line are coming forward. We quote, f.o.b. Cincinnati, as follows: Iron Bars, in carload lots, 1.65c., with half extras; the same in smaller lots, 1.90c., with full extras; Steel Bars, in carload lots, 1.63c., with half extras; the same in small lots, 1.85c., with full extras; Base Angles, 1.73c., in carload lots; Beams and Channels, in carload lots, 1.73c.; Plates, ¼-inch and heavier, 1.73c., in carload lots; in smaller lots, 1.90c.; Sheets, 16-gauge, in carload lots, 2-15c.; in smaller lots, 2.70c.; 14-gauge, in carload lots, 2.05c.; in smaller lots, 2.60c.; Steel Tire, ¾ x 3-16 and heavier, 1.83c., in carload lots.

Old Material.—Trade is reported as very quiet, with not a sale of any considerable tonnage announced. We quote prices, f.o.b. Cincinnati, as follows: No. 1 Railroad Wrought Scrap, $14 to $15 per net ton; No. 1 Cast Scrap, $11 to $11.50 per net ton; Iron Rails, $17 per gross ton; Steel Rails, rolling mill lengths, $12.50 per gross ton; Relaying Rails, 56-lb. and upward, $22 per gross ton; Iron Axles, $18.50 to $19 per net ton; Car Wheels, $15 to $16 per gross ton; Heavy Melting Scrap, $12 per gross ton; Low Phosphorus Scrap, $15 to $15.50 per gross ton.

Metal Market.

NEW YORK, July 5, 1905.

Pig Tin.—The statistics which came out Monday were a surprise to practically all members of the trade, as the consumption of 3600 tons during June was much larger than had been anticipated. The deliveries into consumption have been much larger than was expected and the stocks on hand in the United States, excluding Pacific ports, amount to only 1314 tons, as against 2344 tons on June 1. The statistics as to visible supply compiled by C. Mayer, secretary of the New York Metal Exchange, who also compiled the other statistics given heretofore, show that for Europe and the United States the supply was as follows: Total June 30, 1905, 11,938 tons; against May 31, 1905, 12,967 tons; against June 30, 1904, 13,780 tons; against December 31, 1904, 14,768 tons. On Wednesday prices advanced in London £1 5s., to £140 2s. 6d., and the price of Tin Plates in Swansea also advanced in sympathy with the price of Pig Tin. Business during the week, although broken in by the holiday, was fair and prices have ruled high, although the general asking prices have been slightly lower than when we published our last figures. To-day the quotations on the local exchange are 30.65c. to 31c. for spot, 30.60c. to 31c. for July and 30.40c. to 30.87½c. for August. In London to-day's closing quotations are £140 2s. 6d. for spot and £139 2s. 6d. for futures. The strong statistical position, as has been pointed out heretofore, is largely responsible for the high prices. It would be inferred that a large consumption is indicated and that the activity in trade is something enormous, notwithstanding the claim is made from time to time that individual merchants and brokers have found the situation dull. The market closes very firm to-day and there is little Tin on hand for immediate delivery. The arrivals so far this month amount to 445 tons and 2863 tons are afloat.

Copper.—The continuance of the buying in small lots heretofore noted keeps a firm undertone to the market, and sales are being made for August and September delivery at the ruling quotations of 15c. for Lake and Electrolytic grades, and 14¾c. for Casting grades. In some instances special brands for quick deliveries are sold at a premium of ⅛c., but there is not enough of this business being done to make a quotation at that figure. During the month of June the exports to Europe were good, although those to China have fallen off. The total for the first six months of this year shows an increase of 13,773 tons, as compared with the same period last year. The total exports from New York and Europe amount to 20,112 tons, of which 2600 tons go to Chinese consumers. According to compilations made by C. Mayer, the following changes in European statistics occurred during the fortnight: The stocks decreased 70 tons, while the floats increased 19 tons. So far this month the exports amount to 2861 tons.

Pig Lead.—The market continues very strong and prices are unchanged at 4.55c. to 4.60c. for spot, but the American Smelting & Refining Company continues to quote 4.50c. for shipment Lead in 50-ton lots. In St. Louis the price is unchanged at 4.45c. to 4.47½c., but in London Soft Spanish Lead is quoted at £13 8s. 9d., an advance of 2s. 6d. during the week.

Spelter.—Business is very dull. While quotations are nominally unchanged at 5.30c. for spot and 5.20c. for future deliveries in July and August, concessions from these figures can be obtained by large buyers. In St. Louis much the same condition prevails and the quotation is nominally 5.07½c. The price is lower in London at £23 17s. 6d.

Antimony.—A further advance was made during the week and all grades are now nominally held at 12c. to 13c. The sharp advance is curtailing consumption to a considerable extent.

Quicksilver.—Owing to a better demand and the shortage of available supplies Quicksilver was advanced both in San Francisco and New York, the advance in New York amounting to $2.50, making the quotation $40.50 per flask of 75 lbs. in 100-flask lots. In London Rothschild's price is unchanged at £7 7s. 6d., and second hands make the same quotations.

Nickel.—The market is entirely unchanged as regards quotations, 40c. to 45c. per lb. being the price. The amount of business is very fair and the stocks here are also of fair size.

Tin Plates.—The situation as far as the wage scale is concerned is stated in a special dispatch from Pittsburgh given elsewhere. The closing down of the mills will slightly lessen the stocks held by jobbers and strengthen the demand. It is well known that the manufacturers and some of the larger jobbers have heavy stocks on hand. Apropos of the advance in Pig Tin, it is interesting to observe that in Swansea Plates have advanced 1½d., to 11s. 6d., notwithstanding that the stocks held there are materially larger than at the corresponding time a year ago.

New York.

NEW YORK, July 5, 1905.

Pig Iron.—The current demand is very light, consumers coming into the market only to piece out. Deliveries on old contracts continue to be well taken. Prices continue irregular, the principal pressure coming from the South. We quote for Northern Irons at tidewater $16.25 to $16.50 for No. 1 Foundry, $15.50 to $16 for No. 2 Foundry, $15 to $15.25 for No. 2 Plain and $14.50 to $15 for Gray Forge. Southern Iron is selling on the basis of $15 to $15.50 for No. 2 Foundry.

Steel Rails.—One of the Eastern mills has made sales aggregating about 30,000 tons during the past week. We continue to quote Standard Rails $28 at Eastern mill and Light Rails $22 to $24 at mill.

Cast Iron Pipe.—While no large tonnages were closed in this market during the past week, manufacturers report a fair run of small orders. This city will open bids this afternoon for a considerable quantity of Pipe running from 6 to 20 inches, which will form a good test of the market. Carload lots continue to be quoted at $27 per net ton for 6-inch at tidewater.

Finished Iron and Steel.—The American Bridge Company reports its new business for the month of June aggregating over 71,000 tons. This is a very good showing and corroborates the weekly reports of active trade during the progress of the month. Contracts for new buildings in this city have been placed since last report to the extent of about 15,000 tons. Several good sized projects are under negotiation which will probably be placed this week. Reports from shops fabricating Structural Material are of the most encouraging character, representing them to be not only very busy, but pressed for a greater output, which is only prevented by inability to secure deliveries of Shapes from the mills. The outlook in this line gives no indication of an early decline in the activity. The demand for other classes of Finished products is fair, but not specially active. Quotations at tidewater are as follows: Beams, Channels, Angles and Zees, 1.74½c. to 1.84½c.; Tees, 1.79½c. to 1.89½c.; Bulbs, Angles and Deck Beams, 1.84½c. to 1.94½c.; Sheared Tank Plates, 1.74½c. to 1.84½c.; Flange Plates, 1.84½c. to 1.94½c.; Marine, 1.94½c. to 2.04¾c.; Fire Box, 1.94½c. to 2.50c., according to specifications; Refined Bar Iron, 1.59½c. to 1.64½c.; Soft Steel Bars, 1.64½c.

Old Material.—Old Iron Rails and Wrought Scrap show a further decline, due to the stoppage for repairs of a number of rolling mills and the pressure from some dealers of stock for sale. Relaying Rails also show a tendency toward lower prices. The market generally has been very quiet. Prices per gross ton, New York and vicinity, are approximately as follows:

Old Iron Rails	$16.00 to $17.00
Old Steel Rails, rerolling lengths	13.25 to 14.25
Old Steel Rails, short pieces	13.00 to 14.00
Relaying Rails	19.50 to 20.50
Old Car Wheels	15.00 to 16.00
Old Iron Car Axles	18.00 to 19.00
Old Steel Car Axles	16.00 to 17.00
Heavy Melting Steel Scrap	13.00 to 14.00
No. 1 Railroad Wrought Scrap	14.50 to 15.50
No. 1 Yard Wrought Scrap	13.00 to 14.00
Iron Track Scrap	12.50 to 13.50
Wrought Pipe	11.00 to 12.00
Ordinary Light Iron	7.50 to 8.50
Cast Borings	6.50 to 7.50
Wrought Turnings	10.00 to 11.00
No. 1 Machinery Cast	13.50 to 14.50
Stove Plate	11.00 to 12.00

The Machinery Trade.

NEW YORK, July 5, 1905.

Many of the leading lights in the trade took advantage of Independence Day falling on Tuesday and went away Friday for a few days' rest, and from the quietness prevailing in the machinery section of the city it is evident that buyers also failed to put in an appearance. As a consequence practically a mail order business only was done. This interruption of business by the coming of the Fourth is just what is expected and in no wise affects general conditions, which continue good.

Manufacturers of hydraulic machinery have been reaping a more than ordinary amount of returns during the past few months. The extensive tunneling operations in and about New York have given them much to do and the contemplated projects in those lines have given them plenty to look forward to. The growing interest in hydraulic power plants both in this country and in the South American countries have boomed trade in that branch to a considerable extent and the leading manufacturers of hydraulic machinery have been busy for some time past.

The acting Secretary of War has approved the application of the New York & Long Island Railroad Company for permission to construct a tunnel under the East River from the foot of Forty-second street, Manhattan, to the foot of Fifth street, Long Island City. Either one tunnel with two tracks or two tunnels with one track each is permitted. Permission was also given to sink a shaft at Man-o'-War Reef at the southern end of Blackwell's Island. The shaft is authorized to be maintained for two years, indicating that the work is to be completed in that time. The application will now have to go before the New York State Legislature and be approved by that body before work can be begun.

Tennessee River Power Plant.

The project to establish a hydraulic power plant on the Tennessee River to furnish electric power for the city of Chattanooga is now a certainty as a result of the formation of the Chattanooga & Tennessee River Power Company in this city by C. E. James and J. C. Guild of Chattanooga. Through an agreement with the Government these gentlemen will erect a plant and turn it over to the company formed through their efforts. It is understood that New York capital will figure in the scheme, which involves a large outlay of money. It is proposed to erect a plant of from 30,000 to 40,000 horse-power, and Col. John Bogart of 16 Exchange place, New York, has been engaged as the consulting engineer, he not only representing the company which will take over the plant, but the interests of the constructors as well. The machinery purchases which will necessarily be large will be superintended by Colonel Bogart, as will the main details of the construction of the plant. The plan to establish a power plant at this point has been under contemplation for a long time. The Tennessee River after passing Chattanooga extends through a gorge in the Cumberland Mountains, a distance of 33 miles, and at low stages it is not navigable. The United States Government has for a long time been anxious to make water traffic there possible, and in 1904 Congress passed an act to the effect that the Government would agree to the construction of a lock and dam at that section of the river if the city furnished electric power to operate it, the Government agreeing to grant the city rights to use the power so derived as it saw fit. In the event of the city not taking up the proposition the act contained a proviso to the effect that Messrs. James and Guild could accept the city's part. Nothing was done in the matter by the municipality of Chattanooga, and when the time for its acceptance expired the two Chattanooga men who were behind the movement to establish the power plant took up the contract. It has been decided to move the location of the proposed dam from the place designated in the original act to one more favorable for furthering navigation and furnishing power. A new act to that effect was passed, and the formation of the company in this city a few days ago completed the details of the project. Preliminary plans have been prepared, and they show that while the power plant will be located some 33 miles from the city by river it will be but 12 miles in a direct line from Chattanooga. Therefore there will be 12 miles of transmission line. The lock will be 60 feet wide and the dam 40 feet high and 1200 feet long. The power house will be adequate for 14 units of 3000 kw. each. There will be a transformer house and perhaps other buildings. A large amount of construction machinery will be used in building the lock and dam, and the construction of the power house will entail extensive expenditures along machinery lines. The news of the completion of the preparatory plans is of special interest to the machinery trade, as work will be commenced as soon as possible, and it is expected that the construction of the power house will be completed before winter. It is more than probable that most of the machinery will be purchased in this city.

Railroad Matters.

Included in the recent extensive purchases of the Erie Railroad was what is said to be the largest single order for shapers ever given. The order covered about 23 24-inch shapers aggregating in value about $10,000. Of the orders placed the Ajax Mfg. Company received its share through its New York office, which included three upsetting and forging machines for points near the Middletown shops. The company has now completed plans for the other new buildings to be erected at Hornellsville, N. Y. This will include a boiler shop, 80 x 100 feet; erecting shop, 70 x 100 feet, and power plant about 100 feet square. Plans are progressing very nicely for the proposed improvements at Jersey City, which will cost in the neighborhood of $8,000,000, and no doubt announcement of the details will be made in the very near future. As we have noted in these columns several times, the Erie Railroad will be a large purchaser of machinery for some time to come and as the plans for the various improvements mature the company will undoubtedly appropriate the necessary money for completing the purchase of the $500,000 worth of machinery which it eventually intends to buy. The company also has under consideration the electrification of the Northern Railroad of New Jersey, one of its important branches. This railroad has a terminus at Nyack and there are thousands of commuters along the line who are advocating quick service into New York. The towns of Englewood, Tenafly, Coster and Piermont, all commuting sections, are along the line, and while the railroad is but 30 miles in length there are 21 towns at which trains stop. The railroad officials have talked of the project for some time past, and it is thought that when the extensive improvements now planned are completed steps will be taken toward electrifying the road in question. Just now the railroad has enough on its hands in the way of contemplated improvements to keep its engineering force busy, but it is declared that estimates have been made on the probable cost of equipping the Northern Railroad with electricity and the advantages of a quick train system have been pointed out. The Erie, as well as other railroads, has been looking into the matter of electric equipments for railroads for some time past.

The Norfolk & Western Railroad list has been closed and New York dealers got a good share of the orders. Most of the orders were placed with Manning, Maxwell & Moore.

The Missouri, Kansas & Texas Railroad Company, Milwaukee, Wis., has acquired land at Parsons, Kan., upon which it intends to build very extensive and modern shops. The main shop will be 150 x 860 feet and will be equipped with heavy cranes on both sides for the handling of locomotives bodily. It is the intention to get these shops under cover by fall and occupy them the following spring. G. R. Henderson, New York, architect and engineer, has been employed by the railroad company to design the proposed new buildings.

Announcement has been made that the Interborough Rapid Transit Company and the Long Island Railroad Company have become joint owners of all the traction lines on Long Island outside of Brooklyn. As the Long Island Railroad Company is owned by Pennsylvania Railroad interests the union establishes an important alliance between the Interborough Company and the Pennsylvania. The new merger company will be called the New York & Long Island Traction Company, and its directorate will be composed of four men from the Interborough Company and four from the Long Island Railroad Company. The companies consolidated are the New York & Queens County Railroad Company and the old New York & Long Island Traction Company, which has about 30½ miles of completed track, while the New York & Queens County owns about 40 miles of track. It is the plan of the newly allied owners of the trolley systems to extend them extensively during the summer and before long actual construction operations will be begun. Engineers are now at work planning additions to some of the lines and the machinery trade can look for considerable patronage from the new company in the near future. Just what extensions are to be made the officials are not prepared to announce as yet, but it is understood that they are extensive. Arthur Turnbull, formerly president of the New York & Queens County Company, is president of the new company. Frank E. Haff is secretary and Jordan J. Rollins treasurer.

Important Machinery Requirements.

Although it will be some little time before the company will have specifications completed or will care to consider quotations on machinery for equipping its proposed new shops, the Goulds Mfg. Company, Seneca Falls, N. Y., will when its plans have reached a certain stage probably be in the market for a large amount of mechanical equipment. The company is having plans prepared for seven new buildings to be erected on the large tract of land adjoining its plant, which was purchased last fall. Of this new group of buildings the main one will be a foundry, 144 x 365 feet. There will also be a pattern shop, pattern and flask storage building, cleaning and rattling building, boiler house, power house and toilet building.

Plans have been filed with the Department of Buildings of Newark, N. J., by the J. E. Mergott Company for the new factory structure mentioned in these columns recently which the company is to erect in that city. The building is to cost in the neighborhood of $40,000 and it will be a four-story brick structure, 50 x 200 feet. The boiler house will be part of the main structure and the factory, which will be used for the manufacture of metal novelties, will be one of the most modern of its kind. The company's factory at Irvington, N. J., was destroyed by fire some time ago and the company has been buying machinery in the New York market quite liberally of late. Temporary factory quarters have been secured by the company and they will be abandoned next fall when the new factory is completed. Ground has been broken already for the new structure and the work will be hurried.

Bids are now being received by the Crescent Mfg. Company, Louisville, Ky., for wood and iron working machinery for its plant. The company is asking figures on ten iron working machines and 40 wood working machines, specifications for which the company will gladly furnish any manufacturer that desires to have them.

The purchasing department of the Iron Clad Mfg. Company, Brooklyn, N. Y., is asking bids on a set of plate bending rolls, 6 feet long, about 6 inches diameter, to be run by power and to bend plates any diameter of No. 10 gauge. The company desires immediate shipment.

The De Soto Mining Company has plans prepared for a 400-ton concentrator, to be erected at Middleton, Ariz., and contracts for the machinery to be installed in the plant are being placed by Cyrus Robinson, who has offices with the Arizona Mining Company at 71 Broadway, New York. Mr. Robinson has also prepared plans and is placing contracts for a 2000 horse-power electric power plant to be erected in Arizona. Some contracts for electric equipment have been placed, and bids are being asked for on the remainder. The plant is intended to transmit power to a number of mining and other industries within a radius of 40 miles. All the contracts have been placed for the 500-ton smelter which Mr. Robinson is constructing for the Arizona Mining Company at Valveide, Ariz. The building will be of steel, and the plant will be decidedly up to date.

The recently organized Texas Iron & Steel Company, whose temporary office is in the Chamber of Commerce Building, Detroit, Mich., will erect a plant at Houston, Texas, for the manufacture of commercial bar iron in all sizes from scrap and pig iron. The company is now ready to receive bids for the machinery and other equipment for its new plant, and all communications concerning machinery equipment should be addressed to Philip Haseltine, 1020 Chamber of Commerce, Detroit, Mich., who is in charge of the erection and equipment of the plant.

The Hays Mfg. Company, Erie, Pa., will erect new buildings, consisting of a machine shop, 50 x 160 feet, two stories high, and a foundry building, 60 x 198 feet. The company expects to have these buildings ready in the latter part of this year, and will purchase considerable brass foundry and power equipment.

Among the visitors to New York last week was Geo. A. Kelley of the R. A. Kelley Company, Xenia, Ohio, who while here purchased considerable equipment. The company manufactures cordage and metal working machinery.

The Teter-Heany Developing Company, York, Pa., which has for the past year been manufacturing its fire proof insulating wire, has experienced such a large demand for this product that it has decided to move into much larger quarters. The company is now drawing up plans for a plant to have several times the present capacity, which it will equip with machinery for making a full line of fire proof insulating wire. A complete machine shop equipment will be installed in addition to its own special machinery. The wire is made by the company under patents of J. Allen Heany and is largely used in manufacturing plants, among which are Carnegie Steel Company, Republic Iron & Steel Company, Lukens Iron & Steel Company and the National Tube Company.

Experiments are to be conducted by the Rapid Transit Commission of New York City with a view to finding the best means of cooling the air in the Subway and providing better ventilation. This was decided upon at the last meeting of the commission, when it was argued that something must be done at once toward alleviating the existing conditions. It is proposed to establish a refrigerating plant at one of the stations and a forced air pumping outfit at another in order to ascertain which is the best method of improving the atmospheric conditions. The adoption of either the refrigerating scheme or the forced air plan will entail the purchasing of large quantities of machinery. While it is said that nothing extensive can be done toward ventilating the Subway this summer, it is admitted by all parties interested that something should be done soon, and even if a permanent system is not put in just yet the machinery trade can look for very large purchases for a temporary equipment in view of the fact that the Subway covers such an extensive area.

It will be remembered that we stated in these columns some months ago that the Brooklyn Rapid Transit Company had ordered from the Westinghouse Electric & Mfg. Company a 7500-kw. Parsons turbine in place of the 5500-kw. ordered some time previous for extending its power equipment at the new Kent avenue station. The company has lately placed an order for another 7500-kw. Parsons turbine.

Plans for the proposed municipal electric lighting plant to furnish lights for the streets, parks and public buildings in Manhattan and the Bronx were laid before the Board of Estimate on Saturday. Including land, buildings and all equipment for a central station of a capacity of 15,000 kw. and distributing system designed to supply 15,000 arc lamps and 300,000 incandescent lamps, the cost is estimated at $7,567,000. Accompanying the plans were drawings of the proposed structure at East River, Avenue A, Ninetieth and Ninety-first streets as a central station. At that point, it will be remembered, the city recently purchased the necessary site.

Business Changes.

W. A. Stadelman, for some time past the New York representative of the Wellman-Seaver-Morgan Company, Cleveland, Ohio, has been made general sales manager. Mr. Stadleman will continue as manager of the New York office.

J. W. Lambert, formerly superintendent of the Underwood Typewriter Company, New York, has been made superintendent of the Frank Mossberg Company, Attleboro, Mass.

Catalogues Wanted.—Carlos S. Holcomb, Iquique, Chile, S. A., desires catalogues of candle and soap making machinery.

New England Machinery Market.

WORCESTER, MASS., July 3, 1905.

The week end half holiday, coupled with the Fourth of July falling on Tuesday, very naturally occasioned extreme dullness in the machinery market for the time being, but the general situation has changed but little during the week, viewed from the standpoint of the machine tool manufacturers. It was rather remarkable, considering the season, that such a large percentage of manufacturing establishments in New England did not take the opportunity of giving their employees an extra holiday on Monday, and it may very naturally be deduced that the reason was that business would not permit of a let up of several days together, even in the face of the temptation to leave out a working day that combined the advantages of being the day after and the day before a holiday. It is also interesting to note that fewer announcements than usual have been made of protracted shutdowns for repairs and vacations. The summer will be a busy one as summers go, according to the present outlook. Manufacturers have been encouraged by the continued reports of excellent general business conditions throughout the country, which means that there must be a restocking all along the line. This is true of general lines of manufacture as well as the metal lines. The demand for machine tools is generally in very small lots, a machine here and there, although some sizable contracts are being placed in the carrying out of improvements already announced. The automobile manufacturers continue to buy as they have need for new tools in the rush of turning out belated orders, for which they had not made provision in estimating the season's business.

A Large Engineering Feat.

The great Wachusett reservoir in central Massachusetts, on the south branch of the Nashua River, is all but completed, and discussion has begun of the next step in furnishing the metropolitan district comprising the city of Boston and the cities and towns within a radius of 20 miles with a supply of water that will always keep up to the demand for domestic and commercial purposes. The engineers in working out a great and comprehensive plan of water supply, completed ten years ago, made surveys for a series of great reservoirs, of which the Wachusett was the first. The next in the chain was the Ware River, and beyond it was the Swift River. The Ware River plan would store 11,000,000,000 gallons, which would be no very great addition to the 63,000,000,000 of the Wachusett reservoir, everything considered. But the Swift River reservoir would store 406,000,000,000 gallons, a total compared to which every other artificial body of water in the world seems petty. The Wachusett reservoir is the largest to-day, with the possible exception of one in India, concerning which the Massachusetts authorities have no adequate information. New York is working out a great plan which will make it a formidable competitor. But the present New Croton reservoir has a capacity of only 32,000,000,000 gallons. Some idea of what the Swift River reservoir would be may be obtained from the fact that once it is filled it would provide the 1,000,000 and more people of the metropolitan district with water on the present basis of consumption for about ten years, even if not a drop of water should enter the basin during all that period. It would cover nearly 37 square miles and drain

a watershed of 185 square miles. The Wachusett reservoir has an area of 6.56 square miles. Two dams, one 2470 feet long, raising the water 144 feet above the level of the river, and the other 2065 feet long and 114 feet high, would be required. The average depth of water over all this 37 square miles would be 53 feet. The water would pass on its way to eastern Massachusetts through the Wachusett reservoir, and a tunnel 27.66 miles long would have to be built to make this connection, the difference in level of the two lakes being 135 feet. This is the plan that will undoubtedly be recommended to the Massachusetts Legislature. It will require the outlay of many millions of dollars and will require years to accomplish its fulfillment. The Wachusett reservoir with its conduit, some miles of it a tunnel, has taken nearly ten years to build. Besides a dam 1250 feet long and 158 feet above rock, long dykes had to be constructed, the soil stripped down to bedrock over country in which resided several thousands of people and which contained important industries. The aqueduct itself was a considerable work. The Swift River region is sparsely populated, with only about 30 inhabitants to a square mile; so the element of damages will be very much less than in the Nashua River valley.

The metropolitan district consumed 113,000,000 gallons of water per average day in 1904. The total daily capacity of its water supply to-day, with the Wachusett reservoir, is 173,000,000 gallons during a series of dry years. The margin on the right side is a substantial one, but it is not great when everything is taken into consideration. The district is growing very rapidly in population. Experience has shown that the consumption of water per capita increases with the population. Other cities and towns not included in the district are planning to enter it and take advantage of the excellent water supply. And it must always be remembered that to increase the supply will be the work of years. Probably the Ware River project will be put aside in favor of the larger plan because of the eventual economy of the larger undertaking, for the Ware River reservoir would be expensive in its tunnel acqueducts and its dams out of proportion perhaps to the water obtained. The matter is one of great importance, not only as an engineering undertaking requiring the expenditure of vast sums of money, but as a provision for the welfare of the inhabitants, both in their homes and in their industrial and commercial establishments.

The Turner Tanning Machine Company, Boston, Mass., has bought the tanning machine business of the Vaughn Machine Company, Peabody, Mass. The Turner Company is not yet ready to make full announcement of its new plant, which will be a large one and which will require a large number of new machine tools.

The Norman Mfg. Company, Hartford, Conn., has been incorporated under Connecticut laws, with authorized capital stock of $25,000, to manufacture the Carbidal lighting machine and Carbidal motors, and a general line of lighting, heating and power machinery and power vehicles is contemplated for the near future. The company has established a factory on Mechanic street, Hartford, and its office is at 756 Main street. The incorporators are Harry L. McG. Norman, J. E. McG. Norman and L. S. Lewis.

H. W. Ellis, Taunton, Mass., has established a foundry in that city for the manufacture of brass, bronze, aluminum and composition castings, his works being near the factory of the Lincoln-Williams Twist Drill Company. Later he will install machinery for brass finishing. He will also manufacture jewelers' forges and dies. Mr. Ellis has had a long experience in these classes of product.

The Randolph-Clowes Company, Waterbury, Conn., which conducts brass and copper rolling mills and boiler and tube works, is to erect a new power house in which will be installed Stirling boilers of 1600 horse-power capacity. The company expects to make other improvements to its plant, but is not ready to go into their details.

The Springfield Metal Body Company, Springfield, Mass., is to erect a new building containing about 30,000 square feet of floor area. The company manufactures aluminum automobile bodies, fenders, &c. It states that it will want figures on heating and lighting apparatus and elevator only.

A new corporation is organizing at Danbury, Conn., to be known as the Russell Electric Company, to manufacture telephones, switchboards, medical instruments, electrical toys, &c. A new factory is building for the company. Some of the machinery has already been bought, but the company is in the market for milling machines. The officers of the company will be: President and treasurer, W. E. Russell; vice-president, S. A. Russell, and secretary, W. Earl Russell. The capital stock is $25,000. W. E. Russell, the founder and prime mover in the new business, was the founder of the Russell-Tomlinson Electric Company, Danbury, and its president and general manager for seven years. The new company will manufacture the same line, together with a new line of goods.

Chicago Machinery Market.

CHICAGO, ILL., July 3, 1905.

The branches of mechanical activity classable under engineering are particularly active, and consulting and contracting engineers, almost without exception, are busy, some of them being almost burdened with the volume of work intrusted to them. At the same time, as reported last week, the demand for machine tools is showing a comfortable increase, though it is not yet where the interests involved would like to see it. The Santa Fé has made no further awards since last week's report and has still a large volume of business to place, if it is to be placed at all. The Allis-Chalmers Company has started work on the construction of its new plant, which will more than double the size of the present works at West Allis. When the new plant is completed it is said to be the intention of the company to move the machinery from the Reliance Works on National avenue and to abandon that site altogether. Work is being pushed with great activity on the new plant of Chalmers & Williams at Chicago Heights. The work of remodeling the present buildings, purchased recently, is almost complete and construction of new buildings will be undertaken shortly. Active building operations on the Kennicott Water Softener Company's new plant in the same suburb, referred to in previous reports, are also being pushed. There seems to be rather greater activity than usual in the erection of small water works and electric light and power plants for cities and towns all through the West. Irrigation and hydraulic projects are unusually active, particularly in Montana and Wyoming. Capital is evidently becoming interested in the development of water powers and the improvement in methods of conveying electrical power thus generated is serving to stimulate activity in this direction. Demand for gas engines and gas producers is showing gratifying improvement. While crop reports are somewhat conflicting, the general feeling throughout the West is one of confidence and satisfaction, and many projects are assuming definite form that had been held in abeyance pending the probable outcome of the crops.

New Chalmers & Williams Plant.

The new plant of Chalmers & Williams at Chicago Heights will be rather larger than was at first described in these columns. The power house, instead of being 42 x 75 feet, will be 42 x 50 feet, and the wood working shop will be 42 x 50 feet in the shape of an addition to the 42 feet square pattern shop now standing. In the old plant there has been installed, in addition to the cupolas mentioned in the previous report, a Whiting overhead electric crane and a complete system for hoisting ore, pig iron and coke to the cupolas. New machinery has been bought aggregating over $65,000. Among the purchases already made are the following items: One 10-foot and one 6-foot boring mill; one 48-inch and one 30-inch planer; one 14-spindle rivet drill; one 52-inch lathe; one 42-inch oblong head lathe; one 36-inch, one 33-inch and one 21-inch lathe; one 5-foot and one 2½-foot radial drill; one 42-inch Beaman & Smith planer; one Beaman & Smith drilling, boring, tapping and milling machine; one No. 5 Brown & Sharpe No. 5 milling machine; one Niles heavy boring mill; one Jones & Lamson turret lathe; one Pawling & Harnischfeger horizontal drilling machine; one 24-inch shaper; one 18-inch Morton key seater; one 4½-inch cut-off machine; one special pulley grinding machine; one 150-ton hydraulic wheel press; one Allstatter double punch and shear; one 2½-inch Ajax bolt header; one 3-inch Acme bolt cutter; one 28-inch Gisholt lathe; one 4-inch standard pipe machine; one friction drill; two light emery grinders; one heavy dry grinder; two heavy wet grinders; one No. 19 Higley cold saw; ten miscellaneous pattern shop tools; one 9-inch McDougall & Potter steam hammer. All the machine shop tools and machines will be operated by individual motors, alternating current being used. Twenty-six motors ranging from 2 to 30 kw. will be utilized. The new company will become at once a factor in the market for concentrators, Frue vanners, rock crushers, stamp mills, Huntington mills, Chilean mills, hoisting outfits, crushing rolls, smelting and roasting furnaces, cyanide outfits, &c. It will act as general contractor also for complete mine outfits, including these and other necessary equipments. It now owns through the individual ownership of W. J. Chalmers the Johnson Forging & Flanging Company's plant at West Lake and Union streets, which was for a time known as the sheet metal working shop of the Allis-Chalmers Company. This latter shop will be used by the new company for its sheet and plate working shop, including fabrication of cyanide tanks, and will probably ultimately be used for the manufacture of Cederholm boilers, although this point has not been decided upon.

The Indiana Harbor Railway has decided to locate its shops at Indiana Harbor, Ind. It is too early to state just how extensive these shops will be or what the equipment will consist of, but the present plan of the company is to provide only for immediate necessities.

The Union Drop Forge Company, Chicago, will build an addition on the east side of its present quarters at 76 East Ohio street. It will be of steel construction, one story in hight, 75 x 100 feet. Four 3000-pound drop hammers and four presses have been purchased for its equipment. The company is also having the burned portion of the roof on the old building replaced with a fire proof concrete-steel roof. The Morava Construction Company has the contract for the steel work and the Roebling Construction Company will furnish the concrete.

Plans for the new plant of the Morden Frog & Crossing Works, at Chicago Heights, Ill., are being completed by Nimmons & Fellows, Marquette Building, Chicago. E. C. Shankland & Co. are the engineers on construction. The main plant will cover an area of 250 x 700 feet, and it will be supplemented by six other buildings. The plant will cost about $250,000 and will supersede the present plant at South Chicago.

The Sullivan Machinery Company, whose Chicago office is in the Railway Exchange Building, is erecting a $200,000 plant at Claremont, N. H., general contract for which has been let to F. M. Garthwait, 138 Washington street. A. S. Coffin, 109 Randolph street, is the architect. This new plant will be operated to supply the large quarries of New Hampshire and other New England States, and will supplement the large plant now operated by the company at 170 West Lake street, Chicago. F. K. Copeland is president.

Power Plants.

The city of Whittier, Cal., is readvertising for bids on water works machinery, to close July 10. The new call for bids is for a plant of 4,000,000 gallons capacity instead of 3,000,000 gallons, and for two 250 horse-power boilers instead of two of 150 horse-power each. E. C. Butterfield is city clerk.

Bernard Barthel, Chicago, is architect for a brewery plant being erected by the Kittanning Brewery Company, Kittanning, Pa. Bids will be received early in July on equipment for this plant, which will include seven motors of from 5 to 15 horse-power each, 35-kw. generator direct connected to engine, two 125 horse-power boilers, 25 and 40 ton refrigerating machine, 20-ton can ice machine, switchboards, bottling machinery, wash house machinery and other brewery house equipment.

M. A. Earl, consulting engineer, First National Bank Building, Chicago, has a number of small municipal plants in hand. He has let to McKean, Ball & Co. of the same building three tubular boilers, 60 horse-power engine, 40-kw. generator, 150 horse-power feed water heater and a duplex steam fire pump for the city of Alma, Neb., and a gas engine and gas producer system to Fairbanks, Morse & Co. for the same installation. He will ask for figures this week for the town of Danforth, Ill., for a 15 horse-power gasoline engine, deep well and triplex power pump, elevated steel tank either 30,000,000 or 40,000,000 capacity, 120 or 135 feet high; a masonry reservoir and a water storage and air compression system. He will also ask for bids shortly on the municipal water works plant for Fort Pierre, S. D.

The Home Light, Heat & Power Company, Pittsburgh, Kan., will receive bids until July 12 on one 375 to 400 horse-power gas engine direct connected to one 250-kw. generator, one 225 to 250 horse-power gas engine direct connected to one 150-kw. generator, one second-hand belted 125-kw. generator and switchboard apparatus. E. V. Lanyon is president.

The Père Marquette Light & Power Company, J. N. Cotton, president, Hart, Mich., will develop 700 horse-power on the Père Marquette River, and is in the market for one 300-kw. and one 200-kw. three-phase alternator. All communications should be addressed to J. B. McCallom, secretary.

Cincinnati Machinery Market.

CINCINNATI, OHIO, July 3, 1905.

Trade in machinery circles is far above normal, and more activity than usually prevails during the summer season is evident. The major portion of builders are working on orders received months since, and this, coupled with the fact that new fields are constantly opening in a machinery line, bespeaks a prosperous year. The unsatisfactory state of the pig iron market just at present is presumably responsible for a portion of anything that might be termed a slight falling off in the line of inquiries. Considerable speculation is being indulged in as to what may be the requirements of the Japanese people when peace terms and conditions have been decided upon and the nation's energies turned into the line of development in manufacturing. That they will need an immense number of tools of all descriptions is considered very probable. Should business in its present volume continue into the fall months we are told that several plants will expand in a very substantial manner. Local foundry trade is not what it should be, and while there is apparently a slight change for the better, there yet remains vast room for improvement.

Conway & Co., manufacturers of friction clutch pulleys, have but recently moved into new quarters at 7 Western avenue. Trade is said to be in excellent condition and they hope within the next few months to increase their capacity very materially.

The I. & E. Greenwald Company says that not for years has it been called upon to do the estimating that is now before it. Trade in gear cutters is especially heavy and some large contracts are being let.

The new home of the J. M. Robinson Mfg. Company is beginning to materialize, the brick work having proceeded as far as the second floor. This building will cover quite a large area of ground and greatly increase present facilities. Trade is reported as good, especially for this season of the year.

The R. K. Le Blond Machine Tool Company has completed the rearrangement of its tools and is now utilizing the space formerly devoted to patterns to the building of tools. It reports a large increase in the line of orders, a large percentage being export business.

Greaves, Klusman & Co. are making some changes in their present building and adding more available floor space. They report conditions as being all that could be desired.

Philadelphia Machinery Market.

PHILADELPHIA, PA., July 3, 1905.

The business transacted in the Philadelphia machinery market during the first half of the year just closed has been generally satisfactory. In some instances manufacturers have already exceeded the total volume of business transacted during 1904, but such cases are the exception rather than the rule. While the amount of business taken by many has been good, it would have been possible for a large number of manufacturers to have taken care of a greater quantity than was the case. On the whole, however, the amount of business taken has been gratifying in view of the general conditions of the trade. At times during the half year it was difficult to obtain business enough to keep some plants in full operation, and frequently day to day business was all some manufacturers had to depend upon to keep them running. During the second quarter, however, conditions materially improved and there was business enough during that period for all to get a share. The manufacturers of heavy machine tools of all classes, both standard and special types, have no doubt been the most active during the past six months; locomotive builders, crane builders and manufacturers of conveying and hoisting machinery have also been very active, while those making the smaller standard and special tools, although not generally crowded with work, have had a fair amount of business. Inquiries have been quite good, and while the number has been far in excess of the business placed they have added strength to the market in view of prospective business. At this time there is a natural falling off in the demand, which will no doubt extend more or less during the summer months; some good propositions, however, are under consideration in different branches of the trade, but these usually move slowly.

Steel and iron foundries during the past six months have experienced varying degrees of activity. Steel casting plants have gradually become filled up with orders and now it is said to be somewhat difficult to get prompt deliveries. Gray iron foundries have varied from dull to busy. In some cases more work has been offered than could be readily handled, while in other branches of the trade conditions are still unsatisfactory.

L. F. Seyfert's Sons, machinery merchants, have completed their plant for the handling and storage of heavy machinery at Ninth and Thompson streets, Philadelphia. The new warehouse is 100 x 168 feet ground plan, built of steel and brick, one story high, with a 30-foot gallery on each side of the building. A siding from the Philadelphia & Reading Railroad enters the building, which with the service of a 15-ton traveling crane makes their facilities for handling heavy tools, boilers, engines, &c., most complete. The new plant will be maintained in connection with their present location at Third and Willow streets, the latter being inadequate for their growing business.

The Chisholm & Moore Mfg. Company, Cleveland, Ohio, has taken floor space in the Philadelphia Bourse Machinery Hall, Section U, and has erected an exhibit of its various chain hoists. The Standard Industrial Company, 317 Bourse Building, is the company's representative.

Wickes Bros., through their local office, report inquiries quite numerous and they have a number of good propositions pending, particularly in the line of vertical water tube boilers. The demand for general machinery and equipment continues active and a number of sales have been made, including a mine locomotive to the Lewis Findlay Coal Company, Colliers, W. Va., and gasoline engines to parties in the central part of this State.

I. H. Johnson, Jr., & Co., Incorporated, note a particular demand for heavy lathes. While inquiries have been numerous, there is a little hesitancy at the time in placing orders. Bookings, however, have been quite heavy recently

and all departments of their plant are very busy. The total shipment of lathes made by them during the past six months has exceeded that for the full previous year, and there is still a large volume of business in sight. Some recent deliveries include several carloads of lathes to various concerns, although the great proportion of the business has been composed of one or more tools of the heavy type to various purchasers.

H. B. Underwood & Co. have recently received a number of large orders from Western railroads for their line of portable shop repair tools. They have also booked orders for several portable two-cylinder steam or air motors for driving their portable tools. Foreign inquiry, they advise us, has increased materially and some extensive business is expected to develop from that source. Recent shipments made by Underwood & Co. include portable cylinder boring machines, rotary planing machines and other tools to the various shops of both the Pennsylvania and Baltimore & Ohio as well as to a number of Western railway companies.

The Espen-Lucas Machine Works is busy. Shipments of cold saw cutting off machines and grinders have been heavy during the past few weeks and include among others three machines and grinders to parties in the New England States, four machines to local and nearby parties and four machines and grinders to parties in New York State. A number of machines and several grinders have been shipped to parties in the Middle West. These various deliveries were of the company's different sizes steel foundry, structural material and bar cutting off machines. Inquiries are reported good and the prospect for future trade is considered favorable.

The Philadelphia Roll & Machine Company has recently received a large number of orders for sand and chilled rolls, many of the former being from 12 to 13 tons weight each. Orders have also been booked for heavy engine beds and for mill machinery. All departments of the plant keep extremely busy and the foundry has established a new high record, melting over 1,250,000 pounds of charcoal iron for rolls and castings during the past month. Deliveries of rolls for the various iron and steel mills are being made regularly and with fair promptness by this company.

The Energy Elevator Company is progressing favorably with its new improvements previously mentioned in these columns, but it is not yet prepared to place orders for the tools for its new machine shop. The demand for elevators, the company says, is good, particularly in the local and nearby territory. This company has recently installed a heavy power freight elevator in a Wilmington, Del., abattoir; three large freight elevators in Baltimore, Md.; one power and one hand freight lift for Trenton, N. J., parties, and a large electric elevator for a local concern. Elevators of various types have also been shipped to parties in Washington, N. C.; Sparta, Ga.; Hartford, R. I.; Shamokin, York and Lancaster, Pa., and Fowlersville, Mich.

The Baldwin Locomotive Works has recently received orders from the Japanese Government for 100 locomotives having cylinders 16 x 24 inches, weighing about 108,000 pounds in working order for use in passenger service. Also 50 locomotives of the consolidation type having cylinders 18 x 22 inches, weighing about 111,000 pounds in working order for use in freight service. The first shipment of the passenger locomotives was made on July 5, and other shipments will follow as soon as possible at the rate of at least 25 locomotives per month. All the locomotives are of 3 feet 6 inch gauge. Fifty locomotives of a similar type to the passenger engines were ordered in February of this year and have already been shipped. It has already commenced shipment to Australia of 20 locomotives for the New South Wales Government. The contract for these were taken in competition with the world, price and time of delivery both figuring. The locomotives will be shipped on the Cupic, sailing from New York to Sydney. One thousand locomotives have been built by the Baldwin Locomotives Works during the six months ending June 30.

The London County Council tramways carried during the year ended March, 1905, 164,818,560 passengers, an increase of 31,679,475 over the corresponding period in 1904. About 36 per cent. of the passengers were carried at a 1-cent fare. The average fare per passenger was just under 2 cents and showed a very slight increase over 1904. The net receipts were largely increased by the adoption of roof covers for the double deck cars.

It has been expected that the union of German wire nail manufacturers would be dissolved on July 1. A German letter says that the formation of a new convention that had been contemplated was frustrated by the somewhat exacting claims of a southwest German works. It is, however, not unlikely that the larger mills of Rheinland-Westphalia and Silesia may join later on.

Government Purchases.

WASHINGTON, D. C., July 3, 1905.

The announcement of the resignation of John F. Wallace as chief engineer of the Panama Canal was received in the machinery trade with some regret, as it is thought that the missionary work so necessary in presenting the advantages of their machines done by the merchants will not now produce the returns expected without going to a great expense and trouble to acquaint the new engineer with their tools. A change in so high an office is bound to upset the calculations of those who have worked so hard to have their machinery used in constructing the Panama Canal, and consequently new lines will have to be put out by merchants to convince the new engineer of the superiority of their respective tools. It was announced in Washington Friday that John F. Stevens is to be the new chief engineer.

The Isthmian Canal Commission will receive bids until July 19 for the system of pumps and engines for use at Cristobal, Panama, and the Colon water works. There will be required two steam pumps, two cylinder hoisting engines and several boilers.

The following bids were opened June 27 for machine tools for the various navy yards:

Bidder 2, Aumen Machine & Supply Company, Baltimore, Md.; 8, American Hoist & Derrick Company, St. Paul, Minn.; 18, F. S. Banks & Co., New York; 22, Becker-Brainard Milling Machine Company, Hyde Park, Mass.; 25, Brown Hoisting Machinery Company, New York; 31, Buffalo Forge Company, Buffalo, N. Y.; 34, Burke Electric Company, Erie, Pa.; 36, Brown & Sharpe Mfg. Company, Providence, R. I.; 38, Browning Engineering Company, Cleveland, Ohio; 41, Cleveland Punch & Shear Works Company, Cleveland, Ohio; 49, Century Electric Corporation, San Francisco, Cal.; 56, Curtis Mfg. Co., St. Louis, Mo.; 58, Crocker-Wheeler Company, Ampere, N. J.; 60, Wm. Wirt Clarke & Son, Baltimore, Md.; 63, C. & C. Electric Company, New York; 67, Central Metal & Supply Company, Baltimore, Md.; 77, D'Olier Engineering Company, Philadelphia, Pa.; 79, Drew Machinery Agency, Manchester, N. H.; 90, Erie Mfg. & Supply Company, Erie, Pa.; 91, Eaton, Cole & Burnham Company, New York; 98, Fairbanks Company, New York; 99, Frye, Phipps & Co., Boston, Mass.; 107, General Electric Company, Schenectady, N. Y.; 111, A. D. Granger Company, New York; 114, Hendey Machine Company, Torrington, Conn.; 117, Garvin Machine Company, New York; 128, Harron, Rickard & McCone, San Francisco, Cal.; 130, Harrisburg Foundry & Machine Works, Harrisburg, Pa.; 132, Hartman Company, Philadelphia, Pa.; 134, Industrial Works, Bay City, Mich.; 136, A. L. Ide & Sons, New York; 137, Interstate Engineering Company, Cleveland, Ohio; 140, Jones & Lamson Machine Company, Springfield, Vt.; 152, J. B. Kendall, Washington, D. C.; 165, Montgomery & Co., New York; 167, Manhattan Supply Company, New York; 172, Manning, Maxwell & Moore, New York; 193, Niles-Bement-Pond Company, New York; 203, Oliver Machine Company, Grand Rapids, Mich.; 212, Pratt & Whitney Company, Hartford, Conn.; 220, Prentiss Tool & Supply Company, New York; 235, Ridgway Dynamo & Engine Company, Ridgway, Pa.; 241, H. A. Rogers Company, New York; 243, J. B. Roache, New York; 245, Royce & Ricketts, Washington D. C.; 249, Smith-Courtney Company, Richmond, Va.; 252, Scully Steel & Iron Company, Chicago, Ill.; 253, B. F. Sturtevant Company, Hyde Park, Mass.; 264, Sprague Electric Company, New York; 267, Sherman, Brown & Clements Company, New York; 278, Thresher Electric Company, Dayton, Ohio; 288, Vandyke-Churchill Company, New York; 291, S. A. Woods Machine Company, South Boston, Mass.; 298, Wellman-Seaver-Morgan Company, New York; 303, Westinghouse Electric & Mfg. Company, Pittsburgh, Pa.

Schedule No. 285.

Class 36. One 10-ton locomotive crane—Bidder 8, $6850; 134, $5225; 137, $5852.

Class 37. One 12 horse-power 220-volt wholly inclosed D. C. motor—Bidder 49, $300; 107, $510; 264, $410.

Class 38. Two countersinking drills, motor driven—Bidder 41, $1240 and $1190; 128, $1592; 172, $1089 and $980.

Schedule No. 286A.

Class 61. Two traveling cranes—Bidder 193, $12,470.

Schedule No. 293.

Class 71. One electric hoist—Bidder 25, $485; 56, $442; 152, $465.50; 172, $495; 193, $575; 249, $517 and $370.

Schedule No. 294.

Class 81. One steam locomotive wrecking car—Bidder 8, $9895; 25, $9788; 38, $7462; 134, $6840 and $6990.

Schedule No. 295.

Class 91. One back geared crank shaper—Bidder 117, $554; 114, $650 and $400; 172, $600; 193, $616; 220, $550.

Class 92. One set bending rolls—Bidder 41, $1561; 79, $1415 and $1170; 172, $2225; 193, $1460; 220, $1569; 252, $1575.

Class 93. One universal milling machine—Bidder 22,

$775; 38, $812; 117, $806.50; 114, $730; 172, $780; 193, $735; 220, $806.

Class 94. One 10-ton locomotive crane—Bidder 8, $6400; 25, $5725; 38, $4670; 137, $4987; 298, $5000.

Class 95. One 10-ton locomotive crane—Bidder 8, $6400; 25, $5725; 38, $4650 and $3650; 134, $4420; 137, $4987; 172, $5700; 298, $5000.

Schedule No. 298.

Class 123. One combined blower and exhauster—Bidder 31, $340.

Class 124. One horizontal plate bending roll, motor driven—Bidder 172, $1060; 253, $1120.

Schedule No. 301.

Class 141. One 4 horse-power motor—Bidder 34, $237.25; 107, $210.

Class 142. Two shunt wound 40 horse-power electric motors—Bidder 34, $611.50; 63, $1116; 107, $1130; 167, $1366; 264, $1300.

Class 143. Three 50-kw. generating sets—Bidder 31, $6225; 34, $5550; 77, $5871; 90, $5325; 111, $5760; 130, $5916, $6252, $5889, $5625, $5961 and $5700; 235, $5670; 253, $6660.

Class 144. Two screw cutting engine lathes, motor driven—Bidder 2, $1460.42; 172, $1280; 193, $1372; 220, $1298; 288, $1364.

Class 145. Two screw cutting engine lathes, motor driven—Bidder 2, $1681.30; 167, $2123.41; 172, $1650; 193, $1840; 220, $1648; 288, $1556.

Class 146. One flat turret lathe—Bidder 140, $1615; 167, $557; 212, $2580.

Class 147. One automatic knife grinder—Bidder 167, $1439.30; 291, $560.

Class 148. One hydraulic 100-ton forcing press—Bidder 172, $370; 241, $347.50.

Class 149. One sensitive drill press—Bidder 172, $110; 212, $180.

Class 150. One metal cutting band saw—Bidder 220, $318.

Class 151. One cold metal sawing machine—Bidder 288, $1143.

Class 152. One vertical boring and turning mill, motor driven—Bidder 172, $2335; 193, $2484; 220, $2227; 288, $2260.

Class 153. Two vertical milling machines—Bidder 36, $1868; 22, $1800; 172, $1800; 220, $1798.

Class 154. One vertical milling machine, motor driven—Bidder 36, $2095; 22, $1850; 172, $1850; 220, ~~$4829~~.

Schedule No. 302.

Class 161. Two multipolar compound wound D. C. engine type generators—Bidder 34, $3290; 58, $4405; 63, $4000; 107, $3800; 235, $3938; 278, $3300; 303, $3920.

Class 162. One No. 11 pipe cutting and threading machine—Bidder 91, $950; 245, $825.

Class 163. One No. 7 pipe cutting and threading machine—Bidder 91, $854.50; 245, $525.

Class 164. One hand pipe machine and five three-wheel pipe cutters—Bidder 67, $70.75; 90, $95.89; 91, informal; 132, $71.90.

Class 165. Two horizontal steam engines, 187 indicated horse-power—Bidder 31, $6180; 77, $5680; 130, $6200; 136, $6310; 235, $3990 and $7718.

Schedule No. 303.

Class 188. Three blacksmiths' forges—Bidder 18, $47.85; 31, $87; 90, $69; 152, $99.

Class 191. Four hydraulic jacks—Bidder 152, $190; 172, $189.48.

Class 192. One engine lathe—Bidder 90, $131 and $221; 172, $145; 193, $130.

Class 193. One universal tilting table—Bidder 203, $765.

Class 194. One electrically driven upright drilling machine—Bidder 172, $300; 203, $295.

Class 195. One electrically driven pillar shaper—Bidder 114, $775; 172, $850; 193, $935.

Class 196. One improved jointer and fencing machine, electrically driven—No bids.

Class 197. One wood trimmer—Bidder 203, $155.

Class 198. One electrically driven 16-inch lathe—Bidder 114, $740; 172, $700; 193, $631.

Class 199. One electrically driven grinding and polishing machine—No bids.

Class 200. One 13-inch sensitive drill press—No bids.

Class 201. Three metal saw machines—No bids.

Class 202. One noiseless steel pressure blower—Bidder 31, $38.20; 90, $37; 152, $32.

Schedule No. 304.

Class 232. One electrically driven metal saw—Bidder 98, $169.

Schedule No. 305.

Class 242. Thirty-four hydraulic jacks—Bidder 60, $1372; 152, $1192.80; 165, $1168; 172, $1304.20; 241, $1335; 243, $1192.80; 267, $1155.90.

Class 243. Ten blacksmiths' forges and 15 portable rivet forges—Bidder 31, $575; 90, $609.50; 99, $587.50; 152, $555; 165, $590; 172, $570; 241, $598.20.

The following awards have been made for machinery for the various navy yards, bids for which were opened May 23.

Manning, Maxwell & Moore, New York, class 23, one screw cutting heavy pattern engine lathe, $1050; class 28, one engine lathe, $505; class 29, one 20-inch screw cutting engine lathe with 20-foot bed, motor driven, $1381; class 24, one screw cutting motor driven engine lathe, $1875; class 25, one screw cutting engine lathe, $1394; class 26, two 18-inch screw cutting engine lathes, $2096; class 62, one pillar friction clutch shaper, motor driven, $530.

Niles-Bement-Pond Company, New York, class 42, one motor driven plate planing machine, $4200; class 45, one 100-pound motor driven helve hammer, $990; class 57, one motor driven universal milling machine, $1065; class 60, one extra heavy slotting machine, $1650.

Walter H. Foster Company, New York, class 20, one motor driven engine lathe, $662; class 30, one motor driven universal grinding machine, $810.

Handlan-Buck Mfg. Company, St. Louis, Mo., class 33, one improved knife grinding machine, $365.

H. B. Smith Machine Company, Smithville, N. J., class 41, one hand planing and jointing machine, motor driven, $298; class 56, one door and blind clamping machine, with all attachments, $177.

Drew Machinery Agency, Manchester, N. H., class 59, one heavy pattern outside molding machine, $800.

Pratt & Whitney Company, Hartford, Conn., class 63, one turret head bolt cutting machine, $377.

Berlin Machine Works, Beloit, Wis., class 55, one 54-inch triple drum sander, motor driven, $2055.

J. W. Cregar Agency, Philadelphia, Pa., class 27, one motor driven engine lathe, $800.

Class 43, one 1300-pound power hammer, will be purchased in open market.

Under bids opened June 6 for machinery for the Portsmouth, Boston, Norfolk and League Island navy yards the following awards have been made:

Prentiss Tool & Supply Company, New York, class 13, one horizontal boring and drilling machine, $2050; class 18, one 30 x 30 inch by 8-foot planer, $910; class 21, one 28-inch shaper, $7058.

J. W. Cregar Agency, Philadelphia, Pa., class 11, four portable electrically driven grinders and one portable electrically driven radial drill, $291.25.

Niles-Bement-Pond Company, New York, class 12, one electric traveling crane, $7600; class 16, one 30-inch upright drill, $690; class 31, one duplex milling machine, $830.

John B. Roache, Brooklyn, N. Y., class 15, one 48-inch radial drill, $555.

Manning, Maxwell & Moore, New York, class 17, one 25 x 25 inch by 6-foot planer, $578; class 19, one 20-inch friction clutch driven pillar shaper, $357; class 20, one 24-inch universal shaping machine, $515; class 28, one double belt polishing machine, $162.

Walter H. Foster Company, New York, class 22, one plain grinding machine, $4270; class 23, one universal grinding machine, $710.

Springfield Mfg. Company, Bridgeport, Conn., class 24, one surface grinding machine, $550.

Hill, Clarke & Co., Boston, Mass., class 25, four wet tool grinders, $200.

William Sellers & Co., Philadelphia, Pa., class 26, one drill grinder, $210.

Baird Machinery Company, Pittsburgh, Pa., class 27, one overhanging polishing and buffing machine, $44.75; class 32, one metal cutting band saw, $155.

Becker-Brainard Milling Machine Company, Hyde Park, Mass., class 29, one universal milling machine, $910; class 30, one universal milling machine, $1200.

The following awards have been made for machinery by the Isthmian Canal Commission, bids for which were opened May 13, under schedule 209:

Class 1.

Manning, Maxwell & Moore, New York, item 3, 12-inch independent two-jaw box body chucks, $51.87; item 4, 9-inch three-jaw combination chucks, $43.65; item 9, No. 1 leveling jack, $22.50; item 10, No. 2 leveling jacks, $18.76; item 11, No. 3 leveling jack, $11.29; item 12, Dubuque pattern makers' disk grinder, $229.62; item 16, 24-inch friction planer, $983.84; item 17, 18-inch Acme quick change engine lathe, with 8-foot bed, $3061.38; item 18, 40-inch automatic knife grinder, $233.75; item 19, No. 4 vertical hollow chisel car mortising machine, $1459.29; item 20, mortiser and boring machine, $174.98; item 21, No. 40 four-roll double cylinder planer and masher, $689.96; item 22, No. 4 collar ripping saw, $542.59; item 23, No. 2 three-spindle car boring machine, $846.92; item 25, 42-inch car wheel borer, $1339; item 27, No. 5 pipe threading machine, $1640.61; item 30, Westinghouse air brake equipment for four-wheel dump car, $3018.

H. A. Rogers Company, New York, item 1, No. 30 brass casting tumbler, $100; item 2, No. 44 cast iron tumblers, $696; item 5, 6-inch three-jaw combination chucks, $34.50; item 6, No. 15 round swivel base planer chucks, $180; item 7,

24-inch square base planer chucks, $90; item 8, 30-inch square base planer chucks, $60.

Niles-Bement-Pond Company, New York, item 24, No. 5B single axle lathe, $1802; item 26, No. 2 end hydraulic wheel press, $835.

C. T. Patterson Company, New Orleans, La., item 13, wet tool grinders, $91.72; item 15, 32-inch upright drill presses, $1464.

S. A. Woods Machine Company, South Boston, Mass., item 14, No. 2 16-inch cylinder joining and hand planing machine, $200.

United States Steel Products Export Company, New York, item 28, standard 60-foot turntables, $2946.

Adams-Westlake Company, Philadelphia, Pa., item 20, 16-inch Star standard American headlight, $1775.

Manhattan Supply Company, New York, class 2, caps, plugs, mandrels, pin reamers, taper pins, ring gauges, alligator wrenches, screw jacks, &c., $3120.26.

Rand Drill Company, New York, class 3, type 10 air compressors, $36,800.

New Jersey Foundry & Machine Company, New York, class 4, 10-ton steam road roller and 12 to 13 ton steam road roller, $4990.

Under bids opened June 6 for machinery for the Eastern navy yards, class 14, one 6½-inch universal radial drill, was awarded to Manning, Maxwell & Moore, New York, at $1225.

The following awards have been made for machine tools for the various navy yards, bids for which were opened June 20:

Manning, Maxwell & Moore, New York, class 14, one hand power cornice brake, $236; class 15, one extra heavy forming machine, $149.85; class 16, one large and one small burring machine and one crimping machine, $38.85; class 17, one combined bench and slitting shears, $104.80; class 19, one single bolt cutter, $310; class 122, three special drop apron water tool grinders, $825; class 123, one speed lathe, $140; class 129, one tool makers' engine lathe, $560; class 131, one flat turret lathe, $1230; class 137, one 30-inch upright drill press, $530; class 140, one power hack saw, $20; class 145, one automatic saw sharpener, $245; class 148, 2-foot power squaring shears, $224; class 157, one bolt pointing machine, $195; class 158, one oil separator, $65; class 166, one 25-inch crank slotting machine, motor driven, $4100.

Niles-Bement-Pond Company, New York, class 113, one vertical drilling machine, motor driven, $330; class 117, one motor driven vertical drilling and boring machine, $730; class 118, one four-spindle multiple drilling machine, $2590; class 149, one No. 3 bar shear, $750; class 152, one motor driven shaper, $860; class 154, one motor drive outfit for bending rolls, $910; class 155, one motor drive outfit for bending machine, $575; class 171, one motor driven single punch, including automatic stop, motor 5 horse-power, $1097.

Pratt & Whitney Company, Hartford, Conn., class 130, one combination chasing and turning bench, $920; class 153, one motor driven cutting off machine, $950; class 115, one single spindle vertical sensitive drilling machine, $92.75

Hallidie Machinery Company, Seattle, Wash., class 18, one No. 4 combined punch, shear and bar cutter, $99; class 20, one upright or post drill, one drilling machine vise and one iron workers' solid jaw swivel vise, $64.

Westinghouse Electric & Mfg. Company, Pittsburgh, Pa., class 108, two rotary converters and accessories, $22,076.

Lima Locomotive & Machine Company, Lima, Ohio, class 109, one locomotive, $4680.

Ingersoll-Sergeant Drill Company, New York, class 111, one special air hydraulic balanced jib foundry crane, $475.

Becker-Brainard Milling Machine Company, Hyde Park, Mass., class 133, one universal milling machine, $900.

Berlin Machine Works, Beloit, Wis., class 134, one dimension planer, $100.

S. M. Price Machinery Company, Norfolk, Va., class 135, one high speed planer with direct connected motor, $1560.

Walter H. Foster Company, New York, class 138, one pipe threading and cutting machine, $940.

Royce & Ricketts, Washington, D. C., class 147, one double punch and shear, $1980.

S. A. Woods Machine Company, Boston, Mass., class 156, one automatic plug machine, $975.

Oliver Machinery Company, Grand Rapids, Mich., class 161, two No. 0 and two No. 5 wood trimmers, $315.

Handlan-Buck Mfg. Company, St. Louis, Mo., class 162, one stove pipe crimper and one stove pipe former, $34.

Geo. F. Blake Mfg. Company, New York, class 104, one combined air and circulating pump, $390.

J. A. Fay & Egan Company, New York, class 165, one self contained jig sawing machine, $448.

Cleveland Punch & Shear Works, Cleveland, Ohio, class 167, one ship plate hole beveling machine, $456.

For the first six months of the calendar year 1905 5238 failures were reported to Bradstreet's, a decrease of 2 per cent. from the same period of 1904, but about the same as the average for the past five years. Liabilities total $60,634,667 for the first half of this year, 27 per cent. less than was recorded a year ago and about the same amount as in 1903. The proportion of assets to liabilities in 1905 was 57.4 per cent., as against 55.1 per cent. a year ago and 49 per cent. in 1903.

The Cincinnati Metal Trades Association.

The quarterly meeting and dinner of the Cincinnati Metal Trades Association was held at the Zoo club house Thursday evening, June 29. The meeting was opened by P. Fosdick of the Fosdick Machine Tool Company, chairman of the Entertainment Committee. William Lodge, the retiring president, was called upon for remarks and in his happy manner thanked the membership for their support during his term of office and bespoke great things for the newly elected officers.

The new president, P. G. March of the Cincinnati Shaper Company, was introduced and said that the signatures of practically all the members of the Cincinnati Metal Trades Association had been secured favorably to the merger of the local into the national association. To place the matter in regular form before the association it was agreed to refer it to the Executive Committee with the request to work out fully all details and report.

Secretary J. M. Manley announced that three new applications for membership had been received, which, upon being submitted for consideration, were unanimously elected. These were the Van Wyck Machine Tool Company, Conway & Co., manufacturers of friction clutch pulleys, and the American Valve & Meter Company. The business portion of the meeting having been disposed of, P. Fosdick was requested to act as toastmaster, which he did most acceptably. P. E. Montanus, secretary of the National Machine Tool Builders' Association, made some interesting and instructive remarks. He congratulated the Cincinnati Metal Trades Association on the friendly feeling that was apparent on all sides and stated that a period of prosperity could clearly be seen reaching into the future for the machine tool trade, but it behooved the manufacturers in this line to be constantly on the alert and take all the steps necessary to the safeguarding of these immense interests. To this end he urged that it was the duty of every man to bring all possible pressure to bear upon the representatives at Washington, looking to the facts that they fully appreciate the importance of tariff revision and reciprocity treaties and that everything should be done to enlarge and expand our foreign trade. Mr. Fenner of the American Valve & Meter Company in his remarks dwelt upon the Chinese exclusion act, urging that the American people could not afford to have their products boycotted by the Chinese nation.

There were about 75 present, representing most of the machine tool interests of the city. The following is a list of committees of the association for the year:

Employment Bureau.—E. F. DuBrul, Miller-DuBrul-Peters Company; J. C. Hobart, Triumph Electric Company; H. Lane, Lane & Bodley Company; Walter Laidlaw, Laidlaw-Dunn-Gordon Company; H. M. Norris, Bickford Drill & Tool Company.

Foremen's Meeting.—Wm. Lodge, Lodge & Shipley Machine Tool Company; S. P. Egan, J. A. Fay & Egan Company; B. Sebastian, Sebastian Lathe Company; S. C. Schauer, Cincinnati Machine Tool Company; H. Dreses, Dreses Machine Tool Company.

Quarterly Dinner.—P. Fosdick, Fosdick Machine Tool Company; Ezra Greenwald, I. & E. Greenwald Company; F. A. Geier, Cincinnati Milling Machine Company; S. L. Moyer, Lunkenheimer Company; E. S. Hargrave, Cincinnati Tool Company.

Business Meeting and Entertainment.—R. K. LeBlond, R. K. LeBlond Machine Tool Company; B. B. Quillen, Cincinnati Planer Company; A. H. Tuechter, Cincinnati Machine Tool Company; Al. Robinson, American Tool Works Company; D. T. Williams, D. T. Williams Valve Company.

New Tools and Devices.—Wm. Lodge, Lodge & Shipley Machine Tool Company; Ernst Chace, Cincinnati Milling Machine Company; Geo. Langen, Cincinnati Planer Company.

Membership.—John W. Neil, J. H. McGowan Company; I. Rauh, Cincinnati Electrical Tool Company; F. Streit, A. Streit Machine Tool Company; B. Rose, American LaFrance Fire Engine Company; Fred. Pentlarge, U. S. Bung Mfg. Company.

Finance.—F. A. Geier, Cincinnati Milling Machine Company; A. H. Tuechter, Cincinnati Machine Tool Company; C. H. M. Atkins, Warner Elevator Mfg. Company.

The Sheet and Tin Plate Scale Settled.

PITTSBURGH, PA., July 5, 1905.—(*By Telegraph.*)—At the conference held here last Wednesday between the wage committees of the American Sheet & Tin Plate Company and the Amalgamated Association no settlement of the sheet and tin plate scales was reached, as the company absolutely refused to grant any advance in wages for sheet and tin mill labor, but, on the contrary, demanded material concessions. All negotiations were broken off and for a time it looked like a strike. Through the efforts of President Shaffer another conference was arranged with the company and this was held in Pittsburgh on Monday. A settlement of the scales was effected, as the Amalgamated Association practically conceded everything asked by the American Sheet & Tin Plate Company, and the sheet and tin plate scales were signed by John A. Topping, president, and C. W. Bray, first vice-president, for the American Sheet & Tin Plate Company, and by Theodore J. Shaffer, president, and John Williams, secretary and treasurer, for the Amalgamated Association.

The sheet and tin plate scales as adopted with the changes made are as follows: The rates in the sheet and tin plate scales for 1904-1905 were adopted with the following exceptions:

1. Elimination of output and all clauses affecting output.

2. Clause 5 memorandum of agreement was changed to read: "Rolling shall not be started earlier than 5 o'clock Monday morning, except by local agreement between the men and the management in mills not equipped with traveling cranes for changing rolls."

3. The scale of prices for spreading slabs on jobbing mills shall be left for local agreement.

Clause 2 of the sheet scale was changed to read: "All sheets No. 23 and lighter, 36 inches wide and over, 10 per cent. extra on above."

Clause 20 in the sheet scale was changed to read 72 inches long instead of 60 inches long.

Foot note No. 7 in the tin plate scale was changed to read: "Eight hours shall constitute a day's work in tin and black plate mills."

Foot note No. 16 in the tin plate scale, which reads that "all tin mills working iron or steel over 32 inches wide be classed as large mills, and 10 per cent. extra shall be paid for all such widths over 32 inches wide up to 35 inches wide; for 35 inches wide and over, 20 per cent. extra shall be paid," was stricken out.

The rebate on tin plate for export is to be deducted at the rate of 1½ per cent. until August 1, 1905, after which date, upon notification from the American Sheet & Tin Plate Company, should the business conditions demand, the rebate deduction shall be changed to a 3 per cent. basis, effective immediately thereafter.

The above scales will no doubt also be adopted by the independent sheet and plate mills, and a number of these plants that are now idle are expected to sign the scale and start up within the next week or two, or just as soon as repairs and inventory have been completed.

Allegheny Steel Company.—This company has just been organized at Pittsburgh and has taken over the entire plant of the Allegheny Steel & Iron Company, whose works are at Avenue, Pa. The plant consists of three 50-ton open hearth furnaces, blooming mill, billet and sheet bar mills, a 72-inch plate mill and seven hot and three cold sheet mills. The capital stock is $300,000. The Allegheny Steel Company has bought the holdings of practically all the smaller stockholders and retains the above amount of capital stock. The report that the plant had been sold to the General Electric Company is incorrect and probably arose from the fact that the latter has some stock in the Allegheny Steel Company and buys a very large part of its electrical sheets from that company. The Allegheny Steel Company is a producer of open hearth billets, sheet and tin bars, plates up to 72 inches wide and high grade black sheets, and rolls skelp for the Reliance Tube Company. The new officers are: Capt. Alfred Hicks, president; H. E. Sheldon, treasurer, and R. D. Campbell, secretary. Geo. A. McLean, who was vice-president of the old company, has sold his stock and retires. A vice-president for the Allegheny Steel Company has not yet been elected.

Iron and Industrial Stocks.

NEW YORK, July 5, 1905.

Although the past week was not marked by heavy transactions, the market was very strong and some quite notable advances were made. United States Steel stocks continued their upward movement, while the so-called Southern group was higher and the railroad equipment stocks invariably made gains. Tennessee Coal showed the greatest gain of the week, advancing from 82½ to 92. United States Steel common advanced from 31⅛ on Thursday to 33½ on Monday, and the preferred from 98¾ to 101⅛. Republic common advanced from 19 to 20¼, and the preferred from 77½ to 80¼. Locomotive common advanced from 47 to 49¾, Pressed Steel common from 38⅝ to 40½, and Railway Spring common from 32 to 33½. Colorado Fuel also made a good gain, rising from 43½ to 46¼. Steel Foundries preferred, which declined to 36 on Saturday, rose to 38½ on Monday. Last transactions in active stocks up to 1.50 p.m. to-day were made at the following prices: Can common 11¼, preferred 68½; Car & Foundry common 36, preferred 98; Locomotive common 49¼, preferred 112½; Steel Foundries common 10, preferred 39; Colorado Fuel 46¾; Pressed Steel common 40⅜, preferred 94⅛; Railway Spring common 34¾, preferred 97¾; Republic common 20¼, preferred 80⅝; Sloss-Sheffield common 86¼, preferred 105¾; Tennessee Coal 90¾; United States Steel common 33½, preferred 101⅛, new 5's 94⅞.

The Shelby Iron Company's annual report for the fiscal year ended March 31 shows net earnings of $26,312, against $165,833 the preceding year. The dividend was passed and the balance was carried to surplus, which was thus increased to $252,873. President T. G. Bush, in his report to the stockholders, says: "The general condition of the properties is good, and all things considered we are making iron relatively as cheaply as at any time in the past, but we have probably severer competition than Southern charcoal iron has ever had before."

A plan to provide the American Steel Foundries with additional cash capital has been practically agreed upon and is to come before the directors to-day. Charles Miller, chairman of the board, has the following statement: "In January last the Steel Foundries purchased the Simplex Railway Appliance Company for about $2,500,000, and borrowed $1,000,000 with which to pay a part of the consideration. This purchase has proved to be a good one and the earnings of the company bought are something like $50,000 per month. The Foundries Company has also expended several hundred thousand dollars for the construction of a new plant at Indiana Harbor, Ind., near Chicago, and for extensions and additions to various other plants. By reason of the facts above stated it has been found necessary to raise $2,000,000 or $3,000,000 to cover these requirements. It is expected to make a bond issue on a basis that will be very attractive, the benefit of which will be offered to the stockholders themselves."

Dividends.—United States Cast Iron Pipe & Foundry Company has declared a dividend of 1 per cent. on the preferred stock, payable July 25, for the purpose of giving the preferred stock the full 7 per cent. dividend for the fiscal year ending May 31.

E. W. Bliss Company has declared a quarterly dividend of 2½ per cent. on the common and 2 per cent. on the preferred stock.

The Pittsburgh Oil & Gas Company of Pittsburgh has reduced its quarterly dividend from 2 per cent. to 1 per cent., a dividend at the latter rate having been declared last week.

The La Belle Iron Works, Steubenville, Ohio, has declared the usual quarterly dividend of 1½ per cent., payable August 1.

Westinghouse Machine Company, Pittsburgh, has declared a quarterly dividend of 2½ per cent., payable July 10.

The Pope Tin Plate Company, Pittsburgh, with mills at Steubenville, Ohio, has declared a dividend of 1½ per cent., payable forthwith.

Bids were opened Wednesday by the Department of Water Supply, Gas and Electricity of the City of New York for furnishing 2750 net tons of straight cast iron pipe, 200 lengths to be 20-inch, 1200 lengths 12-inch, 6500 lengths 8-inch, 65 lengths 12-inch extra heavy, high pressure pipe, besides 100 net tons of cast iron special castings. The lowest bid on both items was furnished by the United States Cast Iron Pipe & Foundry Company, its bid for the pipe being $24.95 a ton and for the castings $48 a ton.

OBITUARY.

ALVA CARPENTER.

Alva Carpenter, founder and president of the A. Carpenter & Sons Foundry Company, Providence, R. I., died from apoplexy June 28, aged 76 years. For some time his health had been failing and he had withdrawn from active part in the management of the foundry business, which devolved upon his son, Henry A. Carpenter. The deceased was born in Seekonk, Mass., March 2, 1829, attended the common schools in Seekonk until he attained the age of 15 and then spent two years in a cotton mill. In 1846 he was apprenticed to learn the molder's trade in Providence, and at the termination of his apprenticeship he secured employment in a foundry in Matteawan, N. Y., where he remained for three years. In 1850 he returned to Rhode Island and worked in foundries in Newport and Providence. In 1852 he started in the foundry business with Amos D. Smith under the firm name of Smith & Carpenter, the foundry being located on Dyer street. In 1872 a branch foundry was opened on Aborn street. In 1873 the Dyer street plant was sold and Mr. Carpenter became the sole proprietor of the Aborn street foundry, carrying on the business for a period of ten years, when he formed a partnership with Henry C. Bowen, under the firm name of Carpenter & Bowen. This partnership lasted six years, dissolving in 1880, at which time the present firm was organized, Mr. Carpenter taking his two sons, William H. and Henry A., into partnership with him. A new foundry was erected on West Exchange street and was destroyed by fire November 11, 1892. The plant was rebuilt and in 1896 the company was incorporated under the firm name of A. Carpenter & Sons Foundry Company. He is survived by a widow, two sons and two daughters.

CHARLES A. OTIS, SR.

Charles A. Otis, Sr., founder of the Otis Iron & Steel Company, now the Otis Steel Company, Limited, died in Cleveland, Ohio, at the residence of his son Charles, June 28, aged 78 years. He was born in Bloomfield, Ohio. When he was nine years old his parents removed to Cleveland. For a time he associated with his father in the banking business, but in 1853, at the age of 26, he turned his attention to the iron industry. He promoted the firm of Ford & Otis to make axles and bar iron. Their forge was the first in operation west of Syracuse, N. Y. Shortly after the Civil War he sold his interest and went to Europe to learn the Siemens-Martin process of making steel. On his return he arranged to use this process in America on a royalty basis. In 1872 Mr. Otis was elected Mayor of Cleveland on an independent ticket. The same year he began building the largest open hearth steel plant in the country. In the Otis Iron & Steel Company, which he started at this time, he was associated with E. B. Thomas, J. K. Bole, Thomas Jopling and S. T. Wellman. He was president of this company until 1889, when it was sold to a syndicate in England. His relationship with those under his employ was of the closest nature. Of the 2000 men employed at the Otis works he knew the larger part by name. If any differences arose he adjusted them personally. If any of the men took sick he made provision for their families. As a result there never was a strike at these works. In 1894 Mr. Otis became president of the Commercial National Bank. He continued at its head until December 1, 1904, when it merged with the Mercantile National Bank, forming the present National Commercial Bank. He retired from active business at this time.

He had large interests in the West, particularly in New Mexico, where he was engaged in the development of irrigation in the Pecos Valley. Locally he was interested in the Standard Sewing Machine Company, American Steel Screw Company, Society for Savings and the Cleveland Electric Railway Company. Although engaged in numerous business enterprises, he did not neglect the pleasures of life and the acquiring of knowledge. He traveled extensively, both in Europe and America, thus broadening his wide range of information. As a business man he was keen, industrious and farsighted. Although he had no early education beyond the meager facilities of the country schools, by indomitable energy he became a man of broad training. He leaves three sons.

NOTES.

WILLIAM GARDAM, who was killed at a fire at his home in Brooklyn, N. Y., June 28, was the founder of the firm of William Gardam & Son, a corporation, makers of drill presses and general machinists, New York. He was born at Leeds, England, and was 80 years of age. Coming to this country in middle life, he began the manufacture of surveying and astronomical instruments, afterward taking into partnership one of his sons. Mr. Gardam was an expert in his business and an inventor of considerable note.

WILLIAM W. MCKEE, one of the owners of the Lehigh Car Wheel & Axle Works, died at Catasauqua, Pa., June 28. He was receiver of the Lehigh & Northampton Gas & Electric Company.

Labor Notes.

The Cook County Grand Jury, Chicago, which for a month has been investigating the causes and conditions of the present teamsters' strike, returned its report July 1, and with it 49 indictments against men connected in various ways with recent labor troubles in Chicago. Indictments charging intent to commit bodily injury and assault with intent to kill were returned against 32 members of the Teamsters' Union and sympathizers with that organization who have at different times taken part in the rioting incident to the teamsters' strike. In addition to returning the indictments the jury submitted a long and scathing report dealing with labor conditions in Chicago. The report cites instances in which the men indicted settled various strikes by the use of money and says the fact that they "and other and lesser satellites in the labor world have lived on the fat of the land, spending more money in dissipation than many an honest member of the labor union is able to earn for the support of his wife and family, has been established beyond question. Slugging has been paid for by certain vicious interests at the head of certain labor organizations, and this has been attested to by reliable witnesses."

An attempt was made to destroy the plant of the Hanna Engineering Works, Chicago, July 1, one corner of the building being badly damaged by dynamite or nitroglycerine. As a strike has been in force since June 7, and the plant was constantly picketed, the police and the proprietors both attribute the act to unionists. Though a sufficient quantity of explosive was used to destroy the building, the job was done bunglingly and so little damage was done that the plant was able to open up for usual operation on Monday.

The condition of the strike of foundry helpers and laborers around New York has changed during the past week by the strikers returning to a number of the shops. No concessions of any kind have been made to the strikers by any of the foundries, with the exception of one foundry. The strike centers around E. W. Bliss Company and John J. Riley, Brooklyn, although both have sufficient helpers and laborers to carry on their foundries.

The boiler makers and helpers have gone out on strike from the employment of Lappan & Co., Pittsburgh, Pa., who are erecting coal bunkers in the glucose plant at Edgewater, N. J. Since the boiler makers and helpers have been out the housesmiths now claim the work, thereby causing additional trouble and complication.

The International Association of Machinists has declared a strike against Fuchs & Lang, Rutherford, N. J., and the men are out on strike from their shops.

The officers of the International Association of Bridge and Structural Iron Workers announce that a strike of 50,000 housesmiths throughout the country has been averted by the National Association of Erectors of Structural Steel and Iron signing an agreement with the union for a year at $4.50 a day, the old rate. The employers some time ago announced that they would not renew the agreement and several strikes had been called.

The Baraboo Iron Ore Range.

DULUTH, MINN., July 1, 1905.—Some time ago in an article that I wrote regarding the Baraboo range in Wisconsin and the mine there of the International Harvester Company it was said that the mine showed a drift along the ore body some 1200 feet long, and this was referred to as one of the longest drifts ever opened in an old range mine, being equaled by but one or two mines on the Marquette and Menominee ranges. Since then this drift has been materially extended and is now 1800 feet long, which puts it ahead of the others and makes it longer than any drift in ore ever run on the old ranges of Lake Superior. Numerous experts who have reported on this mine have either found nothing there or have seen a shallow and short ore body. But the mine is steadily shipping and at the rate of 110,000 tons for the season. Its ore, which has been said by some who have sampled it for reports to be valueless, is making a steel that is going into machinery everywhere and is doing good service.

There is a moral in these facts that is easily ascertainable. Some time ago I described the Baraboo range and the Illinois mine, relying on blue prints and the reports of the men who were doing the work, and it was very severely criticised. But the continuance of operations and the increase of tonnage, with the probabilities of the future, make the Baraboo proposition quite an important one for Chicago and its vicinity.

The Pittsburgh Steel Company, which is working about Baraboo, has just bought the mineral rights of the N. H. Smith farm, 320 acres, in sections 30 and 31, T 12, R 6. This land is 4 miles due west of the city of Baraboo, and if it contains ore, as is now unquestioned, it increases the area of the proved district materially. The company held an option on this land at $100,000, for which it gave $1100 two years ago, but the price now paid for the mineral rights is not known, though supposed to be large. Five or six drills have been working on this land for several months and doubtless the company is assured as to its value. Ten or 12 drills, of which three are diamond machines, are now at work east and west of Baraboo. D. E. W.

A British Manufacturers' Association.

It is announced that an association representative of British manufacturers and traders interested in export business is now being formed under the name of the Manufacturers' Association of Great Britain. Its objects will be similar to those of the Canadian Manufacturers' Association and the National Association of Manufacturers of the United States—namely, by co-ordination of the industrial forces and co-operation among the leading manufacturers and merchants, chambers of commerce and shipping, and other such bodies to promote and expand British trade in foreign and colonial markets.

The means by which these objects will be obtained include the appointment of correspondents in all parts of the world to report on openings for trade, and local changes and conditions within their respective spheres and the distribution of such information among firms whom it will most benefit. A trade index to British manufacturers is to be compiled in the chief commercial languages of commerce, large merchants and others in the colonies and foreign markets. Information regarding the commercial standing of any firm of merchants and respecting railway rates and shipping freights all over the world will be collected and supplied, and a staff organized capable of corresponding on technical and commercial subjects in any language, and also of translating into and from English commercial catalogues and similar documents. One of the main objects of the Association will be the systematic dissemination of knowledge of British goods in all possible over-sea markets.

The creditors of the Eastern Tube Company, Zanesville, Ohio, have received notice that they will be paid a dividend of 3½ per cent. on or after August 1.

New Publication.

Modern Industrial Progress.—By Charles H. Cochrane. Philadelphia and London: J. P. Lippincott Company. 8vo. Pages, 647. Illustrations, 407.

This book bears the popular science and industry stamp. The frontispiece is a portrait of the author, who subscribes himself "Yours for Progression." In the preface he observes that "it goes without saying that this book is not a complete record of the world's industrial progress, because in the nature of things a single volume does not afford the space for so vast a record." Some startling questions are asked in the preface, including these, which will give an idea of the author's style: "Who can say that at the close of the twentieth century Darkest Africa may not be underselling us in our own market? Who can be sure that in the development of China and the East there will not come an industrial supremacy that will pale our light? How can we know that there are not now in far-off Australia some prattling Newtons, Faradays and Roentgens who will paralyze our industries by new discoveries? Perhaps from the hills of old Peru or the broad acres of Brazil there will spring new and better conditions that will leave the United States tottering along as a tail ender in the race."

Some of the chapter headings will indicate the scope of the work. We take at random: "Marconi's Victory Over Ether," "Electricity for the Million," "The Iron Horse and the Railways," "Bridges—Big, Little and Peculiar," "The Machinery of Amusement," "In the Bowels of the Earth," "Modern Foods and Food Preservation," "The Kingdom of Iron and Steel." In the iron and steel chapter the author gives a series of views for popular consumption, accompanying them with text that, while not technical nor always accurate, satisfies a certain appetite, after the manner of the familiar newspaper syndicate articles on science. An idea of the accuracy of some of the statements may be gathered from what is said about the ore traffic of the lakes. We are told: "After traversing Lake Huron the vessels pass into Lake Erie by the St. Clair Canal. Most of the ore which does not go on to Pittsburgh stops at Lorain, where is located the enormous Johnson steel plant"—and so on. In the iron ore part of the chapter we find a half-tone view of ore trestles with the title "Transferring ore from one railway to another." The illustration of the Edwards flying shear for continuous rod and bar mills bears the legend "Flying shear in rail mill." We learn that "the machine had to be a heavy one, as many of the bars to be cut are quite thick." A certain amount of instruction can no doubt be obtained by some readers from a book of this sort, but it can scarcely be called an important addition to industrial literature.

New York Pig Iron Warrant Market.

The holiday had its effect on the New York pig iron warrant market in the Produce Exchange during the week past with the result that sales were noticeably few, amounting to but 500 tons. Prices in some instances were higher, however, than those established last week. Of the sales 100 tons regular sold for July delivery at $14.60, 100 tons regular brought $14.70 cash, 200 tons regular sold for February delivery at $14.25 and 100 tons regular sold for $14.45 cash. The following prices were established on call Wednesday noon:

	Regular.		Foundry.	
	Bid.	Asked.	Bid.	Asked.
Cash	$14.30	$14.45	....	....
July	14.40	14.55	$14.65	$15.00
August	14.30	14.50	14.50	15.00
October	14.40	....	14.50	15.00
November	14.25	....	14.50	15.00
December	14.25	....	14.50	15.00
February	14.50	14.75	15.00	15.25

The Railway Department of the Russian Ministry of Ways of Communication has just contracted with the South Russian Dnieprof Iron Works for the supply of 16,000 tons of steel rails at $35 per ton. All the State railways are about to be relaid with heavier rails than those now in use.

HARDWARE.

THE first of January and the first of July are commonly considered as turning points in the year, dividing the 12 months into halves, which are looked upon as having a certain completeness of their own and entitled to be regarded as periods more or less defined in the unceasing movement of life and trade. Both are indeed connected with the idea of pleasure and recreation, as the one follows the holidays, while the other introduces the holiday season. In the one case there is the peculiar pleasure which is connected with the closing year and its Christmas and new year festivities and felicities, covered, however, usually in business circles with so much of care and the pressure of work, often for those in places of responsibility unusually exacting, that there is little opportunity for rest and the laying aside of the toils, so often pleasurable, of business life. As soon as each new year opens there is the summons to renewed enterprise and the putting into practice of the lessons of experience. There is certainly with most busy men little opportunity for relaxation.

While July cannot boast its holidays, it ushers in the holiday season. It is not permitted to point to any single week distinguished by merry making, but it has larger gifts and opportunities for the multitudes of people in these strenuous days, who usually are in greater need than they fancy of rest and recreation and a change of scene if it may be had and the turning of the faculties for the time at least to quiet and enjoyment. Nature is at its best. There is a tranquillizing influence in the summer warmth, the children and the birds are free, it is the time of flowers and fruits and harvest, and the days have only just begun to shorten. With the invitation which nature gives and her welcome to all who heed it there is in town and country a lessening of the pace in toil and trade, a yielding to the influence of the summer and a breaking away to a greater or less extent from the tasks and drudgeries of life. July among the months has the high distinction of bringing in the vacation season, the one time in all the year when by the multitude work may be laid aside for a little and rest and pleasure made the business of the hour.

Six months of 1905 have already passed and at the turning of the July headland it is permitted business men to take a look over the half year and note its characteristics and its lessons. Fortunately for most the retrospect should be a gratifying one, as the country generally has enjoyed a marked prosperity, which continues to give ample promise for the months to come. The expectations with which the year opened were not perhaps fully realized—this is a way indeed that expectations have—but the failure to give all that was anticipated in a too sanguine and too enthusiastic estimate of the future did not carry with it anything of general disaster or make the transaction of business to be unduly difficult or resultless. The former conditions, as old as trade itself, still remain, the amelioration which has been effected in some directions not doing a great deal more than shifting the stress and leaving business life the fierce struggle it has always been. The old problem, however, presents itself in constantly changing form. Those who are studying the tendencies of trade know that there still continue to be among merchants and manufacturers a strenuous competition and a warfare of wares and values, so that many are complaining that the margins of profit are narrow and that the expense account shows at least its old-time vitality and aggressiveness. The half year has not indeed solved the question of the catalogue houses, which seem, despite all that has been said and done, to prosper and increase, while in other ways also are the old methods of distribution being changed as the growing volume of trade overflows, as it were, its former banks and makes new channels for itself. Questions concerning transportation have also become not only a topic for popular discussion, but merchants and manufacturers are more and more realizing that too little attention has been given to the practical aspects of freight matters, not merely in their general bearing but also in connection with the individual business. Within a short time too the subject of special brands has come prominently before the Hardware trade, and its discussion and the resultant action may be attended with far-reaching consequences. The ingenuity with which markets are sought and the tenacity with which they are held are one of the impressive lessons taught by past experience and enforced emphatically by the events of the recent months. Never before have so much thought and energy been expended in efforts to obtain trade, both at home and abroad, and met by an equally determined spirit to retain it. There is indeed much to engage the thought of the observant and broadminded merchant. Business never offered more fascinating problems and never called for more energy, initiative and resource.

For these reasons it is incumbent on the man of affairs and all who are in places where the responsibility of direction rests upon them to see to it that the summer season gives its renewal of strength and clarifying of mind and judgment, which are more essential than ever before to the attainment of large success in business. The vacation period has an important though genial work to do for those who have not reached their limit.

Condition of Trade.

The past week, broken as it has been by a national holiday and introducing as it does one of the quietest months in the year, has had little requiring special note in the review of the Hardware market. Business as a rule has been permitted to take its own course without special effort in its prosecution, with a disposition to take up later matters which do not call for immediate attention. Under these circumstances the volume of business is small, especially as the travelers very generally are off the road for the time being and trade loses the important impulse given it by their activities. Manufacturers too are giving their attention largely to matters other than the immediate marketing of goods and are letting up a little in the pressure of production. The merchants throughout the country, too, have been quite willing to defer ordering, especially as the condition of the market has suggested conservatism in purchasing, not so much because important reductions in price are considered likely, as because the feeling has been abroad that there is nothing in the situation which makes it necessary to place orders at once. Business is thus quiet as is usual at this time of the year, but there seems to be a somewhat more confident feeling than was prevalent a short time ago. Following a certain disappointment in the volume of business during the spring months, which it is frankly conceded did not come up to the very sanguine expectations of many in the trade, there was a slight wavering in confidence accompanied by and perhaps suggested in part at least by the weakness which characterized the Iron market. While there was no reason to apprehend anything serious in the way of a relapse into dull trade or into discouraging trade conditions, some apprehension was entertained of a moderate reac-

tion in values and volume of business, even though it was difficult to point to any sufficient reason for this in view of the great prosperity enjoyed by the country and by practically all classes. This feeling of apprehension has gradually given place to a more assured tone, and July opens with business conditions which are generally regarded as healthful and full of promise. Whether or not the improved feeling in the trade can be explained by a reference to definite facts or figures there seems to be little question as to its existence. Merchants and manufacturers thus enter upon a quiet period expecting an early resumption of activity in business and justified in enjoying whatever may be permitted in the way of vacation in anticipation of a continuance of good business conditions.

Chicago.

By the time this is read the Chicago jobbers will have completed their tabulation of figures not only for the month of June, but for the first half of the year. Notwithstanding the teamsters' strike, which interfered with the delivery of merchandise to local Hardware merchants and to some extent delayed the shipment to out of town customers, the month of June will compare favorably with any previous June in the history of the trade and with some firms will probably exceed all previous June records. It is more than likely, too, that the six months just closed will show a volume of business in excess of any similar period. The Hardware trade as a whole is in a prosperous condition and there is every promise that present prosperity will be continued throughout the year at least. As we have stated before in this report, sales of Lawn Mowers, Haying and Garden Tools, Ice Cream Freezers, Refrigerators and Wire Cloth have been exceptionally heavy. In connection with Screen Cloth it is interesting to note that the consumption of Galvanized Cloth, notwithstanding the fact that its retail prices are much higher than those of the Painted Cloth, is rapidly increasing and is already at least double that of last year. A high priced specialty of this description will thrive under general conditions of prosperity; but, on the other hand, it will be the first to feel the effects of hard times when they appear again. Processes are being developed for dipping Finished Cloth into a bath of molten metal, a mixture of aluminum and tin being used, instead of weaving the Cloth in the first place from a galvanized wire. This process of dipping will, it is hoped, not only involve a considerable economy, but will make a Cloth that is more durable than that woven from galvanized wire. Both jobbing and manufacturing interests are making ready to take care of the fall trade, which they expect will come in at an early date. Already inquiry for fall goods is rather more active than usual, particularly in lines based on Sheet Steel and Wire, because the feeling is gaining ground that the cost of the raw materials to manufacturers in these two lines may advance. The same is true of articles containing hard wood, as the price of hard wood is advancing rapidly under the increasing scarcity of hard wood timber.

Cleveland.

THE W. BINGHAM COMPANY.—Our six months' business, ending July 1, will show a larger amount of goods sold than was sold during the corresponding six months of last year. A larger number of orders have been handled, and the conservative manner in which our customers have been buying during these last six months indicates to us that no one has an overstock, and that we may expect a good driving business during the remainder of the year. If the crop reports we receive are authentic and "pan out" as we hope and believe they will the Fall business of 1905 should be a "corker."

A great many orders have been and are now being placed for shipment in the fall for such goods as Food Choppers, Meat Choppers and Stuffers, Coal Hods, Hand Sleds, Ice Skates and other short season goods. Our customers understand that orders for these goods must be placed early, in order that full assortments may be had. These being short season goods, the manufacturers must to a great extent govern their output upon the orders that they have in hand early.

Now that the season on Lawn Mowers and Grass Hooks is pretty well closed, Scythes, Snaths, Grain Cradles, Scythe Stones and mounted Grindstones are having "their innings." There has been an immense amount of Wire Cloth and Poultry Netting sold this year, but the trade still hangs on and there is a good demand for both of these commodities at the present time; customers are assorting their stocks, and jobbers who carry a good supply of these goods are getting the benefit of these rush orders.

Liberal orders for Ammunition, Guns and Fall Cutlery—*viz.*, Butcher Knives, Carving Sets and Pocket Cutlery—are being placed, and a lot of business will be done in these lines of goods during the next 90 days.

We are very thankful for the business that our friends have given us during the first six months of this year, and we trust that the service we have rendered them has been such that it will encourage them to give us a larger amount of business during the remainder of this year. Customers will find stocks in Cleveland well filled and well assorted in all lines of Hardware, mining, milling and manufacturing supplies and Sporting Goods.

Philadelphia.

SUPPLEE HARDWARE COMPANY.—This week begins the clerical vacation period and the usual quiet that prevails in trade circles during the month of July, although in some sections of the country orders are being placed for goods needed in the early fall. The past six months, while they perhaps as a rule have not reached the volume anticipated immediately after the opening of the year, have still shown, we believe, a substantially good trade, although weather conditions during a couple of months after January 1 retarded the volume of trade.

Prices have been fairly well maintained, both by manufacturers and jobbers. The latter have carried full stocks of goods and thus been able to supply any quick demands, and while there may have been an occasional temporary delay in making shipments of certain kinds of goods we think as a whole that the retail trade have never been more promptly supplied.

The crop prospects in various sections of the country at this writing are good and the weather favorable for a continuance, so there is every appearance of a good fall trade. Manufacturers have supplied their orders fairly promptly during the past six months and express great confidence for the future. There are indications of a heavy demand for building materials, and an unusual number of buildings will undoubtedly be erected. The railroads, notwithstanding the large number of engines and cars that have been placed on the road during the past six months, still show evidence of not being able to supply the requirements of increased trade. Every indication, however, points to an improvement in this respect during the next six months, as the managers of the roads appear to be quite as anxious to insure prompt delivery as the shippers.

Baltimore.

CARLIN & FULTON.—The first half of the year has now been completed with the general condition of the country never better for business. The growing crops all promise well with perhaps the exception of cotton, of which the production will be curtailed by the decreased acreage and unfavorable weather in certain sections. Prices of all agricultural products are excellent. We understand that the average price of the leading agricultural staples for the year 1904 was about 26 per cent. greater than the year previous and, in fact, not for many years have the farmers realized as much for what they have raised. This applies not merely to one crop, but to all varieties and in all sections of the country.

This being the basis for all business, we cannot have any grounds for other expectations than a good, active fall trade. Labor in all directions is well employed and at remunerative prices. The banks seem to be well supplied with money and the rate of interest is low.

Prices of all manufactured Hardware seem well sus-

tained, and while the output of the factories has been tremendous in both raw material and the manufactured products the consumption seems to keep pace with the output.

The present month will, however, be very largely devoted to preparation for the coming season and also given up to vacations, but it will undoubtedly show a volume of business up to the normal amount for the dullest month of the year.

Louisville.

BELKNAP HARDWARE & MFG. COMPANY.—The weather conditions which act so critically at this harvest season have improved in the last few days and the sound of the reaper and binder is heard in the land. Some farm products—viz., potatoes, onions and cabbage—have made almost record low prices, but that means cheap food for the people and is a blessing we can be thankful for, although we may have to pacify the tillers of the soil by assuring them that the quantity consumed will in a way offset the low price. There is nothing startling to report in the Hardware market. There seems to be a healthy demand for seasonable goods, without any of those attendant features that go to make an interesting market.

Now that our people have become so identified with the trade of the world we are watching with interest the sharp play for advantage between Germany and France and realize the importance of the moves on the commercial chessboard made by the respective Governments in the interest of their people. With our enormous investment in factories and mines a business man of the United States cannot study too carefully how it may be affected by the commercial agreements between the great powers of the world. America's confidence in its ability to handle the situation will probably go a long way toward securing that success which is vital to our welfare.

Portland, Oregon.

CORBETT, FAILING & ROBERTSON.—The arrival last week of the first of two automobiles racing across the continent from New York to Portland in 44 days marks a new era in travel. The time, considering season, condition of roads and long distance traveled, makes a good showing. At the start the intention was to arrive on the opening day of the National Good Roads Convention, and they made good.

For the cereal year ending June 30 Portland leads every port in the United States in wheat exports, a good record for the Pacific Coast. Last week $6,000,000 was paid for the stock of one of our street railways by Eastern people, some $4,000,000 of which stays here and will have to be invested. Real estate already has advanced to what seems to be a high level as compared with a few years ago, so that banks will be likely to hold the sack for some time at least, assuring an easy money market.

The first half of the year now drawing to a close has been more than satisfactory as regards trade and collections. Price and demand for cattle have been better than for two years past, while wool has all been sold at phenomenal figures, making a demand and price for sheep that have resulted in very heavy sales. The outlook for crops is still very bright and prospects for prices good, so that the coming six months should stack up favorably with the past.

Nashville.

GRAY & DUDLEY HARDWARE COMPANY.—Probably the dullest season of the year for Hardware jobbers is now at hand. Many of the salesmen are taking their vacations and those that are on the road are as a rule only securing filling in orders. We are glad to state, however, that this June was a little better than usual and that the volume of sales showed a small increase over June of last year.

Prospects for fall trade are very flattering at this writing. While we have had a little too much rain in some sections of the South and in middle Tennessee and the wheat crop is not up to the standard, at the same time, taking it as a whole, the average conditions throughout the South are first class. We anticipate a better trade during the summer and fall months than usual.

While the cotton crop will be smaller than last year the price is very satisfactory, owing to recent advances, and the crop this year will be produced on a more economical basis than for many years. We do not notice any weakness whatever in prices, and collections are good.

NOTES ON PRICES.

Wire Nails.—Seasonable conditions rule, including light demand and some irregularity in prices, the latter not being very pronounced and confined for the most part to the jobbers, some of whom still have stocks which they are anxious to reduce. There are some competitive points in the South and Southwest in which, owing to special conditions, concessions are being made. In the main the situation is considered satisfactory and the market has an excellent tone. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Carloads to jobbers	$1.80
Carloads to retailers	1.85

New York.—Jobbers report demand for the month of June as having been excellent, in some cases exceeding that for May. Little was done in the week under review, as business was largely suspended from Saturday night until Wednesday morning. The market remains firm and prices are unchanged, as follows: Single carloads, $1.99; small lots from store, $2.05.

Chicago.—Prices during the months of July and August are controlled by producers rather than governed by the law of supply and demand or they might recede materially each year at this time, as the demand is seasonably quiet. We continue to quote official prices on Nails and other Wire products with the explanation that better prices may be offered here and there by mills which feel that they must turn accumulated stocks into cash. Quotations are on the basis of $1.95 in car lots to jobbers, $2 in car lots to retailers, with 5 cents advance for less than car lots from mill.

Pittsburgh.—During this month and probably in August there will be material restrictions in output of Wire Nails, caused by a number of the leading mills shutting down for inventory and repairs. Demand is rather quiet, as it always is at this season of the year, but buyers are specifying fairly well on old contracts. Prices in the main are fairly firm, but to some points of delivery, notably in the South and Southwest, there is some shading of prices by mills that have low rates of freight to points in Southern territory. Some of the jobbers are also shading prices, having large stocks of Nails bought when prices were lower and which they are anxious to move out more promptly. We quote Wire Nails at $1.80 in carloads to jobbers and $1.85 to single carload buyers, actual freight from Pittsburgh to destination being added, but in some cases these prices are shaded.

Cut Nails.—The price which is obtainable is 5 cents or more per keg below official quotations, as the result of continued moderate demand. Specifications on contracts are being received by mills, but new business is light. Quotations are as follows: Carload lots, $1.75; less than carload lots to jobbers, $1.80, and to retailers, $1.85, f.o.b. Pittsburgh. Iron Cut Nails, for delivery at Pittsburgh, Buffalo and all points west of these cities, 10 cents advance per keg on Cut Steel Nails. These quotations are shaded quite frequently.

New York.—The local market to some extent reflects the irregularities which characterize mill prices. The demand is restricted to immediate requirements. New York quotations are as follows: Carloads on dock, $1.89; less than carloads on dock, $1.95; small lots from store, $1.95 to $2.

Chicago.—Cut Nails share the uncertainty of Wire Nails during the midsummer interim, but are quite generally held at $1.90 to $1.95 for car lots to either consumers or merchants, with $2 asked for reasonably large lots less than car lots. Store prices range from $2 to $2.10, according to size of order.

Pittsburgh.—New demand for Cut Nails is light and prices are being shaded more or less, depending upon

point of shipment. For delivery in Southern territory some comparatively low prices are being made. We quote Cut Nails at $1.70 to $1.75, base, in carload lots, f.o.b. maker's mill, the lower price being absolute minimum of the market. For Iron Cut Nails an advance of 5 to 10 cents a keg is charged over above prices.

Barb Wire.—The closing down of mills for annual repair and to restrict production near to actual requirements during the Summer is having a salutary effect in maintaining prices at about the official quotations. There is some irregularity in prices, however, but these are confined largely to jobbers and competitive points. Quotations are unchanged, as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Galv.
Jobbers, carload lots	$1.95	$2.25
Retailers, carload lots	2.00	2.30
Retailers, less than carload lots	2.10	2.40

Chicago.—The decision on the part of many of the other mills to follow the leadership of the American Steel & Wire Company in closing down mills during July for repairs and in order to maintain the equilibrium of prices has tended to strengthen the market, and has put a stop to much of the sporadic price cutting which had been in evidence previously. Official prices are as follows: Painted Wire, $2.10; Galvanized, $2.40; car lots to retailers, 5 cents higher; less than car lots, Painted Wire, $2.25; Galvanized, $2.55; Staples, Bright, in car lots to jobbers, $2.05; Galvanized, $2.35; car lots to retailers, 10 cents extra, with an additional 5 cents for less than car lots.

Pittsburgh.—This is always a dull season in Barb Wire, but a fair amount of material is moving out from jobbers who are still carrying good sized stocks. Many of the mills are closed for inventory and repairs, and this will materially cut down output. Prices are fairly strong, but are being shaded to some extent by jobbers and also by a few mills that have favorable freight rates to certain points of delivery. We quote as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Galv.
Jobbers, carload lots	$1.95	$2.25
Retailers, carload lots	2.00	2.30
Retailers, less than carload lots	2.10	2.40

Smooth Fence Wire.—Similar conditions to those ruling in the Barb Wire market very well represent the situation in Smooth Fence Wire. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carloads	$1.65
Retailers, carloads	1.70

The foregoing prices are for base numbers, 6 to 9. The other numbers of Plain and Galvanized Wire take the usual advances, as follows:

	6 to 9	10	11	12&12½	13	14	15	16
Annealed	Base	$0.05	.10	.15	.25	.35	.45	.55
Galvanized	$0.30	.35	.40	.45	.55	.65	1.05	1.15

Chicago.—As has been previously reported in these columns, manufacturers of Woven Wire Fencing have enjoyed an exceptionally good season, and while many of their mills are closed down for their annual house cleaning and repairs the proprietors are, as a rule, satisfied to make contracts for the coming season at present prices with such mills as have demonstrated in the past their ability to make proper deliveries of Wire. Official prices are as follows, on the basis of $1.80 for Annealed, car lots to jobbers, and $1.85 in car lots to retailers, with 5 cents advance for less than car lots and 30 cents premium over Annealed for Galvanized.

Pittsburgh.—New demand is rather light, but the mills are still making shipments on old contracts, while stocks of Wire held by jobbers are moving out quite freely. There is some unevenness in prices among some of the jobbers, and also by some of the smaller mills to certain points of delivery. Taken as a whole the tonnage in Smooth Wire this year has been fairly satisfactory to the mills. We quote as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carloads	$1.65
Retailers, carloads	1.70

Conductor Pipe, &c.—A circular under date of July 3 relating to discounts and prices to dealers and territorial limits has been issued by the National Conductor Pipe Association, to take effect at once. This includes changes in Special Conditions and in the Territorial Limits of Undefined and Eastern Territory, the full statement of which is as follows:

Special Conditions.

USE OF NESTED PRICES.

Nested prices on Conductor Pipe are not allowable unless every joint in the crate will nest. For example, a shipment of 250 feet 3-inch, 250 2-inch will take nested prices. A shipment of 500 feet 3-inch, 250 2-inch, will take not nested prices for 250 feet 3-inch and nested prices for the remainder.

Nested prices on Conductor Pipe are allowable for all deliveries made to local dealers f.o.b. warehouse or delivered by wagon to their places of business, but if delivered to transportation companies for shipment outside regular prices will govern for the point of destination.

BILLING PRICES.

The prices ruling at point of destination are to be used in every instance, whether the shipment takes a freight allowance or is not of sufficient size to do so.

PRICES USED ON BOUNDARY LINES.

Cities or towns situated on boundary lines of territories take the price of the Territory that may be the lowest—*e.g.*, Louisville, Ky.; Covington, Ky.; Paducah, Ky.; St. Louis, Mo., and all cities and towns located on the south bank of the Ohio River or west bank of the Mississippi River between Cairo, Mo., and Dubuque, Iowa, take Eastern Territory prices.

Territorial Limits.

UNDEFINED TERRITORY.—Territories not defined below will take the price for Central Territory, with freight allowed to the point on western boundary of defined territory through which the shipment passes to reach destination.

EASTERN TERRITORY.—The Eastern Territory comprises all of the United States lying north of a line drawn from Newport News, Va., and following the line of the Chesapeake & Ohio Railroad from Richmond via Lynchburg to Clifton Forge, Va., and the Ohio River (including Norfolk, Va.; Portsmouth, Va.; Newport News, Va.; Old Point Comfort, Va., and Berkley, Va.), to the Mississippi River; the territory east of the Mississippi River and north of the Ohio River as far as the northern boundary line of Illinois, including Milwaukee, Wis., and excepting the upper peninsula of Michigan, which is placed in Central Territory.

CENTRAL TERRITORY.—The Central Territory consists of that part of the State of West Virginia and that part of the State of Virginia lying south of the Chesapeake & Ohio Railroad; the States of Kentucky, Missouri, Iowa, Wisconsin, except the city of Milwaukee, the upper peninsula of Michigan, and that part of the State of Minnesota lying south and east of the Minneapolis, St. Paul & Omaha Railroad from a point on the Iowa State line near Worthington to Minneapolis and St. Paul and south and east of the St. Paul & Duluth Railroad from Minneapolis to Duluth, also the cities of Sioux Falls, S. D., Charleston, S. C., and Savannah, Ga.

SOUTHERN TERRITORY.—The Southern Territory consists of the States of Mississippi, Alabama, Georgia, Florida, North Carolina, South Carolina and Tennessee, except the cities of Charleston, S. C., and Savannah, Ga., and including the cities of New Orleans, La.; Galveston, Texas, and Houston, Texas.

SOUTHWESTERN TERRITORY.—The Southwestern Territory consists of the States of Louisiana, Arkansas and Texas, except the cities of New Orleans, La.; Galveston, Texas, and Houston, Texas.

No changes have been made in list prices, the list for Elbows of April 1, 1905, and other items in the Standard List of March 23, 1905, including Conductor Pipe, Eaves Trough, Gutters, &c., remaining unchanged. Discounts also are unchanged, with the exception of Copper Conductor Pipe. The clause relating to Freight Allowance is also changed as in the following statement of terms, discounts and freights:

	Eastern Territory. Per cent.	Central Territory. Per cent.	Southern Territory. Per cent.	S. W. Territory. Per cent.
Galvanized Conductor Pipe, nested	70 & 15	70 & 7½	70 & 2½	60 & 20
Galvanized Conductor Pipe, not nested	70 & 10	70 & 2½	60 & 20	60 & 10
Copper Conductor Pipe, 14 and 16 oz.	50 & 10	50 & 7½	50 & 5	50 & 2½
Galvanized Eaves Trough	80 & 5	75, 10 & 10	75 & 12½	75 & 5
Galvanized End Pieces, Miters and Drops	35	53	35	35
Galvanized Plain Ridge Roll	80 & 7½	80 & 2½	75, 10 & 5	75 & 7½
Galvanized Formed Valley	70 & 5	70	60, 10 & 10	60 & 12½
Elbows, galvanized steel, galvanized C. C. Iron or tin, list April 1, 1905, standard gauge	60 & 10	60 & 10	60 & 10	60 & 10
No. 26 gauge	35	35	35	35
No. 24 gauge	25	25	25	25
No. 22 gauge	10	10	10	10
Copper Elbows	37½	37½	37½	37½

TERMS OF PAYMENT.

Limit of credit, 60 days, with privilege of deducting 2 per cent. from face of invoice if cash is paid within ten days from its date.

FREIGHT ALLOWANCE.

No freight shall be allowed on shipments of less than 250 linear feet.

On shipments of 250 linear feet or more full freight may be allowed to all points in defined territories.

On shipments to points in undefined territories of 250 linear feet or more, freight may be allowed to the point on western boundary line of defined territory through which it passes to reach destination.

On shipments of Elbows alone, freight may be allowed as per Elbow Sheet of April 1, 1905.

On shipments of Elbows in connection with Pipe, Trough, Ridge Roll or Formed Valley, the rule applying to shipments of Pipe, &c., will apply.

Rivets.—Manufacturers of small Iron and Steel Rivets held a meeting June 30, at which the present discount to the trade in general of 75 and 10 and 5 per cent. was unchanged. Business in this line was reported very good, as sales have held up well and the market continues firm.

Axes.—The recent advance of 25 cents per dozen in the price of Axes is understood to be strictly maintained by the associated manufacturers, although many in the trade are disposed to question the wisdom of the advance, apprehending that it indicates a disposition to put prices up to a level, especially if it be followed by further action of this character, which cannot in the long run be maintained. The National Cutlery Company, Detroit, Mich., which is not in the combination, advises us that its prices are unchanged, it being the company's policy to vary its prices only in accordance with variations in the price of the raw materials used in the manufacture of the goods and in the cost of labor.

Maydole Hammers.—The trade has learned with a good deal of interest of the new policy of the David Maydole Hammer Company, Norwich, N. Y., in dividing the country into three districts, each district to have its own range of discounts to the retail trade. The United States is divided into three districts, discounts decreasing with the distance from the factory. The first district comprises the States from the Atlantic Ocean to the Missouri River; the second district, the States of North and South Dakota, Kansas, Nebraska, Arkansas, Indian Territory, Oklahoma and Texas, and the third district territory lying westward therefrom. The jobbers' selling prices, it is understood, are determined for each of these districts, with inducements to adhere strictly to them.

Binder Twine.—Active buying is becoming less pronounced as the winter wheat harvest is about ended. Future demand will depend largely upon the quantity of Twine required for oats and spring wheat. Prices continue to show irregularities, and quotations range from 8¾ to 10 cents per pound for Sisal and Standard Twine.

Window Glass.—June 30 witnessed the end of Glass making by the hand operating Window Glass factories for the hot weather months. It is questioned whether the factories ever went out of blast with so light stocks in manufacturers' hands. For some sizes which are particularly scarce advances above regular quotations are being paid. It is understood that about 40 Western distributing houses recently met in Chicago and advanced prices 5 per cent. Eastern jobbers are reported as arranging for a meeting in the near future to consider the advisability of advancing prices.

Oils.—*Linseed Oil.*—Demand has been restricted to small lots for immediate requirements. There has been some inquiry regarding prices on contract orders for forward delivery, which will no doubt become more pronounced as the month gets older, as a number of contracts will expire on July 31. So far, it is understood, crushers have been reluctant to book orders. Some in the trade anticipate an advance in price before the new crop of Northwestern seed reaches the market. At present the market is firm at unchanged prices. Quotations are as follows: City Raw, 50 to 51 cents per gallon, and State and Western Raw, 48 to 49 cents, both according to quantity.

Spirits Turpentine.—Business at Southern points and in this city has been confined to moderate purchases, and the market has fallen off from that of last week. New York quotations, according to quantity, are as follows: Oil barrels, 59 to 59½ cents; machine made barrels, 59½ to 60 cents per gallon.

THE FIRM of William A. Hall's Son, 124-126 Broad street, New York, manufacturer of and dealer in Anchors, Chain, Cordage, &c., has recently closed arrangements for handling the goods of the Camden Anchor-Rockland Machine Company in the State of New York.

TRADE ITEMS.

WILLIAM O. BEMENT, superintendent of the Wire Goods Company, Worcester, Mass., who recently returned from an eight months' trip to Europe, was the recipient on the 28th ult. of a handsome silver loving cup suitably inscribed, the donors being the employees of the company. Many of the men who joined in the presentation have been connected with the company during the whole of Mr. Bement's 20 years' incumbency as superintendent.

C. W. SCHEDLER, representing Geo. Borgfeldt & Co., New York, sailed June 29 on his annual European trip in the interest of his house.

AT a meeting of the Board of Directors of the Eureka Mower Company, Utica, N. Y., held on the 21st inst., the following officers were elected: George B. Davison, president and treasurer; A. H. Munson, vice-president; C. B. Kimball, secretary and assistant treasurer, and Wm. E. Gilroy, superintendent. These gentlemen, all of Utica, with Henry P. Davison, vice-president of the First National Bank of New York City, comprise the Board of Directors. The capital stock of the company is $100,000.

FREDERICK PFEIFER, 101 Reade street, New York, has been appointed New York representative of the Lawson Mfg. Company, Racine, Wis., manufacturer of the Matchless Floor Hinges. Mr. Pfeifer's arrangement with the company covers the marketing of this Hinge in all territory east of Buffalo and Pittsburgh, and becomes operative early in July, or as soon after as the necessary transfer can be effected.

THE NATIONAL CUTLERY COMPANY, Detroit, Mich., which is making a line of Tools, including Axes, Hatchets, Knives, Razors, &c., in referring to the quality of its products emphasizes the fact that the goods are handled throughout the entire process of manufacture only by skilled workmen, working by the day instead of on a piece price basis. The company also refers especially to the tempering process used as requiring a high grade of steel in securing a fine and uniform temper.

THE E. B. REITH METAL POLISH COMPANY, Chicago, has been incorporated to succeed to the business of E. D. Reith at 640 Larrabee street. The organizers of the company, which is capitalized at $10,000, are Louis J. Gamwell, Frederick B. Seeley and William B. Walrath.

THE third annual picnic of the Iowa Hardware merchants will be held at Mason City and Clear Lake July 13 and 14.

UNDER date of July 1 announcement is made that the partnership heretofore trading as the F. A. Godcharles Company, Milton, Pa., has been succeeded by a company under the same style which has been incorporated under the laws of Pennsylvania and will continue the manufacture of Cut Nails and Muck Bar as formerly. The officers of the corporation are F. A. Godcharles, president; W. A. Godcharles, vice-president, and W. B Godcharles, secretary and treasurer.

THE M. E. BLASIER MFG. COMPANY, Utica, N. Y., has been incorporated to manufacture Plumbers' Goods and Supplies, Boat Hardware and other Brass and Metal Goods. The company takes over the business formerly conducted by M. E. Blasier & Co. The capital stock is $50,000, fully paid up, and the directors are M. E. Blasier, F. R. Switzer, F. A. Klein, Geo. W. Sanborn and Thos. F. Hobbes. M. E. Blasier is president and treasurer and F. A. Klein vice-president and secretary.

R. CHRISTENSEN & Co., 54 Warren street, New York, is the present title of a business over 20 years old, formerly conducted by R. Christensen and until May 1 at 88 Chambers street and recently incorporated. The business will be carried on along the old lines of marketing Cabinet and Upholsterers' Hardware, Hardware Supplies and House Furnishings. The incorporation authorizes $10,000 capital, in shares of $100 each. The directors are R. Christensen, Curtis L. Wilcox and M. H. Christensen. R. Christensen is president and C. L. Wilcox secretary and treasurer.

G. W. Berkhimer is about to open a Hardware, Stove, Sporting Goods and notion store in Carson, Iowa.

CANADIAN SHOVEL & TOOL COMPANY.

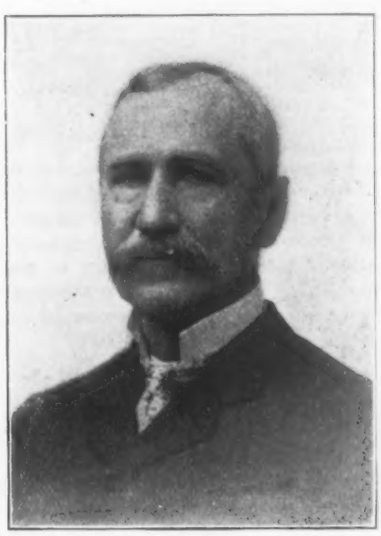
THE CANADIAN SHOVEL & TOOL COMPANY, Hamilton, Ontario, is the title of a new concern recently organized to manufacture Shovels, Drain Tools, &c., according to American ideas. A meeting of the stockholders was held in that city on June 15 for the election of directors and executive officials, the following directors being chosen: J. C. McCarty, Charles H. Holton, William A. Holton, Frederick Skelton and E. W. McCarty. A meeting of the directors was then held and the following officers elected: J. C. McCarty, president; Charles H. Holton, vice-president, and William Holton, secretary and treasurer. J. C. McCarty is president of J. C. McCarty & Co., New York, and Charles H. Holton is president of the American Horseshoe Company, Phillipsburg, N. J. Frederick Skelton was for years superintendent of the Terre Haute Shovel & Tool Company, Terre Haute, Ind., and likewise superintendent of the Laughlin Nail Company, Wheeling, W. Va. Mr. Skelton came from Sheffield, England, originally and has been in the Shovel business all his life, being descended from a family who for several generations have been manufacturing Shovels. J. C. McCarty & Co., New York, will market the entire product of the mill.

Three brick buildings are now in course of erection. The main shop covers a site 75 x 250 feet, the polishing shop 60 x 175 feet and the pickling room is in a building 40 x 40 feet. The buildings, which will have a producing capacity of 100 dozen a day, are more than half completed and the company expects to be ready to do business by September 1 next.

The capital stock of the company is $150,000, all paid in, and there are but seven stockholders, those besides the five directors named above being Philip S. Dyer and George B. McCarty.

JAMES MORONEY.

THE accompanying portrait is of James Moroney, recently elected to the presidency of the Texas Hardware Jobbers' Association. Mr. Moroney is president of



JAMES MORONEY.

the Moroney Hardware Company of Dallas, and for many years has been active in the work of the association.

AT the recent annual meeting of the Pacific Coast Hardware and Metal Association the following officers were chosen for the ensuing year: President, Andrew Carrigan; first vice-president, L. C. Scheller; second vice-president, C. F. Prentiss; treasurer, R. W. King. The following Executive Committee was chosen: A. A. Watkins, W. R. Wheeler, Andrew Carrigan, Wakefield Baker, Fred R. Brand, H. M. Haldeman, Brace Hayden, H. J. Morton and Joseph Sloss.

R. D. WARREN.

HEREWITH we present a portrait of R. D. Warren, the newly elected first vice-president of the Southern Hardware Jobbers' Association. Mr. Warren is a

R. D. WARREN.

member of the Benedict, Warren & Davidson Company of Memphis, Tenn.

DEATH OF JAMES A. O'NEIL.

JAMES A. O'NEIL, one of the oldest North Carolina Hardware merchants, died from the effects of paralysis on June 24, at his residence in Henderson, N. C. Mr. O'Neil was born in Middlesex County, N. J., on the old turnpike between Trenton and New Brunswick, August 18, 1837. He served his time as blacksmith and later machinist, and became foreman of the Government shops at Alexandria during the Civil War. Here he contracted a cough which alarmed him and in 1869 he decided to give up his work and take up farming. He went South and bought a farm about 5 miles out from Henderson. Here Mr. O'Neil's health improved so rapidly that when he recognized the need of a machinist in the vicinity, there being none, he concluded to do some light work of this character in connection with his farm. In a few years his reputation outgrew his facilities—for a mechanic in those days was a novelty in that section—so in 1878 he abandoned farming entirely and moved to Henderson, which was then only a village. There he embarked in the Hardware business, carrying on his machine shop in conjunction with it and meeting with marked success. In 1891 Mr. O'Neil suffered a stroke of paralysis and he sold the machine shop part of his business, continuing the Hardware Store until 1898, when his son, Maurice J. O'Neil, succeeded him. He is survived by his widow, three daughters and a son.

THE NEW CASTLE FORGE & BOLT COMPANY'S CATALOGUE.

THE first catalogue of the New Castle Forge & Bolt Company, New Castle, Pa., is just being distributed. It is a book of nearly 100 pages, in a handsome flexible cover, with clear type and clean cut illustrations of the company's complete line. It includes Car Forgings, Brake Outfits, Structural Shapes, Upset Truss Rods, Dock and Bridge Forgings, Mine Equipment, Rivets, Machine, Carriage and Track Bolts, Nuts, Washers, Chains, Hooks, Steel Bars, &c. The book also contains useful tables of weights &c., together with a telegraphic code. Having a large equipment of the newest and most approved machinery, the company states that it is prepared to turn out work at a minimum cost and can make prompt delivery of Forgings of any size, shape or quantity.

TRADE WINNING METHODS.

This department is for the description of approved methods of carrying on and extending business, and a cordial invitation is given to merchants to co-operate in the effort to make it suggestive and of practical use to the trade.

ENAMELED WARE WINDOW DISPLAY.

AN Enameled Ware window that resulted in very satisfactory sales for the Greenville Hardware Company, Greenville, Miss., is illustrated in Fig. 1. In trimming this window it will be noticed that three arches were erected a little distance in front of the back wall.

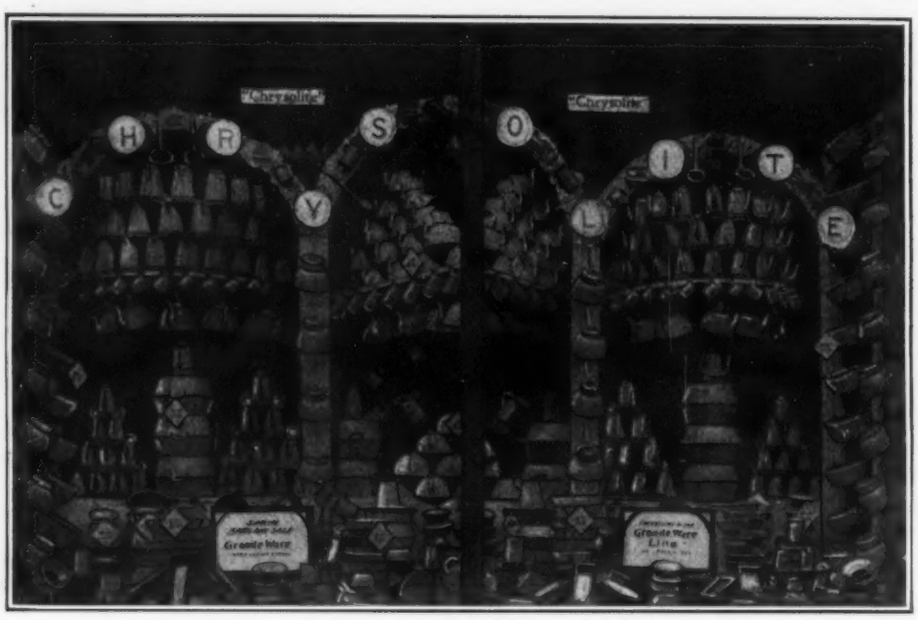


Fig. 1.—Enameled Ware Window Display.

In each of these were set two shelves, as shown in Fig. 2. The three lower shelves were straight and extended from the back wall to the posts supporting the arches. The three upper shelves started at the back wall and extended a little in front of the posts, the two end ones having a curved front and the front of the middle one being pointed. The sides and back of the window were plaited with pink cheese cloth, which was puffed with a light green around the edge. The posts and arches were covered with the same material as a background. The entire window was then filled with Enameled Ware, the floor and background with Granite Ware and the arches with Chrysolite. This made a very effective display, and the blending of the colors was particularly attractive. Prices were distinctly marked on several of the articles and two signs were placed in the front of the window. The window trim was executed by Charles F. Muller.

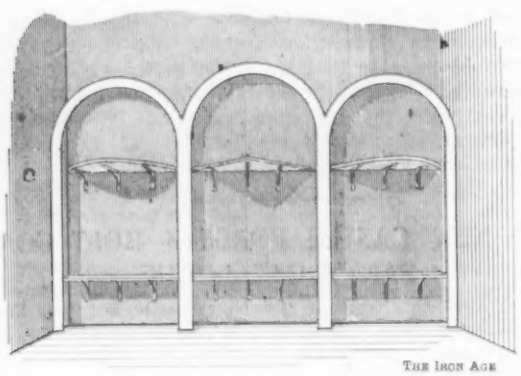


Fig. 2.—Detail Showing Arches and Shelves.

KEEPING IN TOUCH WITH THE FARMERS.

AT intervals during the year Frank D. Wheelock, Sugar Grove, Pa., who handles Hardware, Agricultural Implements, Carriages, Farm Wagons, Harness, Buggies, Paints and Oils, &c., issues circulars in the form of folders, which are mailed under a one-cent stamp to a list of about 1000 persons in his territory, nearly all of which has the rural free delivery. Mr. Wheelock's trade is mostly with farmers and his business is drawn from several townships. He finds that these folders pay and that more business is secured through them than by advertising in the village newspaper, which has a limited circulation and reaches only a small proportion of the farmers. With the folders are also sent circulars furnished by manufacturers and relating to goods appropriate for the season. Referring to the matter of catalogue house competition, Mr. Wheelock in one of the folders describes his position as follows:

> We will cheerfully get prices on any goods in our line not carried in stock and furnish them to you at a very small margin above actual cost. While we do not claim to sell everything as low as quoted by catalogue houses, we do claim that on the majority of goods we will sell as low as they will, on the same terms and conditions.
>
> We prefer to sell goods that we can guarantee all right, and thereby have a satisfied customer, as we believe a satisfied customer is our best advertisement.
>
> You can always find us here ready and willing to make our guarantee good. You can examine the goods before buying and see what you are getting, and we believe in the long run you get better bargains, all things considered, than the catalogue houses give you. They are not doing business for fun any more than we are, but they quote some things at cost to catch trade and on others charge a big profit to get even.
>
> Do not think we are finding fault because you buy your goods of catalogue houses, for we are not. Your money is yours, to buy where and what you please, but we simply ask you if it is not better for you in the long run to patronize your home merchants, spending your money at home among people who spend their money with you, rather than to send it off to merchants in the large cities whom you never expect to see and who care nothing for you or the community in which you live.
>
> You need the retail merchant in the community and the retail merchant needs you. Treat him right and we assure you he will you, or he can't stay. Come in and see us anyway, and see if we can't deal. We assure you there will be no ill will on our part if you don't trade a cent. We want to see you and want to see you right now.

"FACTS FROM THE SCALE."

UNDER the above title J. N. Brunson, Hardware merchant, Callender, Iowa, in an advertisement in a recent issue of his local paper undertook to demonstrate to the people in his territory that he is in a position to hold his own so far as the competition of catalogue houses is concerned. Believing that "the public generally are not posted on the quality and kind of goods" bought from catalogue houses, Mr. Brunson made a comparison between the catalogue prices on a variety of goods and his own prices. To facilitate investigation as to the correctness of his figures the catalogue page on which the goods are shown was given in connection with the comparison. The manner in which this enterprising merchant presents the matter is shown herewith:

	Catalogue page.	Catalogue house price.	Weight.	Freight.	Cost at Callender.	Brunson's price.
Single Tube Spring Punch	303	25c.	10 ounces.	½c.	25½c.	25c.
Revolving Spring Punch	303	60c.	12 ounces.	¾c.	60¾c.	50c.
11-inch Pot Covers	178	05c.	4 ounces.	⅛c.	05⅛c.	05c.
11½-inch Pot Covers	178	06c.	5½ ounces.	¼c.	06¼c.	05c.
12½-inch Pot Covers	178	07c.	8 ounces.	⅜c.	07⅜c.	05c.
10-inch Perfection Cake Tin	178	11c.	6½ ounces.	¼c.	11¼c.	10c.
10-inch Deep Pie Plates	178	05c.	5 ounces.	¼c.	05¼c.	05c.
10 x 3 inch Milk Strainer	178	14c.	8 ounces.	½c.	14½c.	15c.
11-inch IX tin Colanders	178	17c.	8 ounces.	½c.	17½c.	15c.
No. 0 Steel Traps	168	20c.	9 ounces.	½c.	20½c.	10c.
No. 1 Steel Traps	168	22c.	12 ounces.	¾c.	22¾c.	15c.
No. 1½ Steel Traps	168	32c.	18 ounces.	01c.	33c.	20c.
Vegetable Graters, 3½ x 9	180	05c.	.....	..	..	05c.
14-inch Basting Spoon	181	05c.	.....	..	..	05c.
21-quart Bread Raiser	177	83c.	4 pounds.	03c.	86c.	85c.
Horse and Cattle Cards	302	09c.	8 ounces.	¼c.	09¼c.	10c.
1-quart Granite Pudding Pans	176	10c.	6 ounces.	¼c.	10¼c.	10c.
2-quart Granite Pudding Pans	176	15c.	8 ounces.	¼c.	15¼c.	15c.
16-inch Soapstone Griddle	185	90c.	13¾ ounces.	10c.	$1.00	$1.00
No. 9 Gray Granite Tea Kettle	176	95c.	3 pounds.	03c.	98c.	75c.
4-quart Gray Granite Coffee Pot	176	52c.	2 pounds.	02c.	54c.	50c.
12-quart Gray Granite Water Pails	176	66c.	3 pounds.	03c.	69c.	65c.
14-quart IXXX Tin Dish Pan	177	45c.	2 pounds.	02c.	47c.	40c.
17-quart IXXX Tin Dish Pan	177	49c.	2½ pounds.	02½c.	51½c.	45c.
21-quart IXXX Tin Dish Pan	177	56c.	2¾ pounds.	02¾.	58¾c.	50c.
Deep Muffin Pans	177	12c.	1 pound.	01c.	13c.	15c.
XXX Tin Flour Sifter	181	17c.	.....	¼c.	17¼c.	15c.
No. 2 Plumb's Claw Hatchet	137	52c.	2 pounds.	02c.	54c.	50c.
Stanley's Adjustable Block Plane	128	65c.	1⅝ pounds.	02c.	67c.	65c.
10-inch Hatchet Brace	135	75c.	.....	02c.	77c.	75c.
Wood Potato Masher	63	04c.	.....	¾c.	04¾c.	05c.
Wire Potato Masher	184	05c.	.....	..	05c.	05c.
Large Wire Toasters	184	12c.	.....	..	12c.	10c.
12-quart XXX Tin Pail	178	66c.	4 pounds.	04c.	70c.	60c.
14-quart XXX Tin Pail	178	78c.	4¼ pounds.	04¼c.	82¼c.	65c.
Kraut Cutters, 3 knives	61	$1.50	12 pounds.	10c.	$1.60	$1.25
High grade Nail Hammers	138	82c.	1½ pounds.	01c.	83c.	75c.
Universal Bread Maker	177	$2.00	6½ pounds.	06c.	$2.06	$2.00

Mr. Brunson reminded the readers of the paper that when they buy goods of him they "see and know just what you (they) are getting, and if it is not satisfactory it is easy of adjustment; when you buy goods of a catalogue house, if the purchase is not satisfactory you simply take your medicine, because the trouble of adjustment is too great for the benefit received."

POINTERS FOR HARDWAREMEN.

BY "ON THE ROAD."

THERE is hardly a detail in life that makes for success more than the ability to remember names. It is born in some men, therefore it is easy enough for that fortunate class, but in the man who lacks that sense, for it is quite important enough to term a sense, great effort ought to be put forth to conquer his weakness. This weakness can be conquered, and in plain justice to your business the trial ought to be made. One Saturday night last winter the writer was chatting with a Hardwareman when in came a big blustering Irish contractor.

"Hello, Jim," he fairly howled.

"How do you do, Mister? What can I do for you?" replied the Hardwareman.

"Mister, am I?" grunted the contractor. "Why the —— don't ye call me by me name?" and in the same breath he growled: "Make out me bill, and be quick about it, too."

"But I'll have to ask your name," meekly spoke the Hardwareman.

"Mister Pat Daly," sneered the contractor.

Remembering Names

The bill was soon made out and handed to him, at which he stripped off the binder of his roll of bills, threw it on the showcase, with a request that the bill be receipted. This done he took his bill and change, and, as he turned to go, he said:

"Maybe when you get another chance to write me bill you'll remember the name."

That was almost six months ago, and I recently learned the contractor hadn't bought a cent's worth at that store since, though the contractor has had work a-plenty. Pretty severe lesson that for the Hardwareman now, wasn't it? I'll grant that the contractor had a drink or two too many, but being in his cups he was just that much more grouchy and irritable. But suppose the Hardwareman, forgetting the name, had used a bit of quick thinking and greeted him with a homely generality like "Howdy?" or "Hey, there!" enthusiastically accenting the first syllable. Wouldn't that have tided over the difficulty that brought a loss of business in its wake?

Is there anything in the world that is meaner to put into a package than loose nails? As Shakespeare says: "We trow not." Five pounds of nails, in wrapping up, takes a piece of paper big enough to cover a table, and paper costs money. So the most feasible way to handle nails appears to be paper boxes. They are cheap (as cheap as the paper would be), they come flattened out or "knocked down," they are easily made ready for contents, and are by far the most sensible method. This is a detail, but it's a good one, and close attention to detail is profitable.

Pasteboard Boxes

JANNEY, SEMPLE, HILL & CO., Minneapolis, Minn., have purchased the property, 52 x 86 feet, corner of First avenue S and First street, and after demolishing the buildings now occupying the site will erect a structure corresponding with their present establishment, which is already a large and imposing one.

Arkansas Retail Hardware Association.

In the following columns we give several interesting papers which were presented at the recent convention of the Arkansas Retail Hardware Association at Little Rock. They will well repay perusal as practical and suggestive discussions of important subjects:

EVOLUTION OF THE STOVE BUSINESS.

BY FELIX S. BLACKWELL OF BUCK'S STOVE & RANGE COMPANY, ST. LOUIS, MO.

Mr. Blackwell prefaced his paper by the statement that the evolution in the Stove business was not unlike the evolution which had taken place in so many directions in this country. He referred to the changed conditions which have made necessities of what were formerly considered luxuries and briefly traced the wonderful development of some of the nation's resources. He said that the progressive merchant of to-day had entirely abandoned the old time methods of merchandising. There was nothing but failure confronting such methods in the American business world of to-day. The merchant who is wise enough to see the difference between the shoddy and the good, who is enterprising and alert and in touch with the popular pulse, that is the man in whose store high grade goods will be found. He it is who makes the successful merchant. Continuing, he said:

There is no such thing as an evolution in the Stove trade. It is the evolution of America and the American people. It is the thoughtful, intelligent and thorough application of the American idea to the affairs of intelligent men and women. To give you some idea, however, of the growth in volume of business in the Stove trade I quote from the reports of the general secretary of the National Association of Stove Manufacturers: In 1899 the value of the Stove output of the country was $35,815,500; in 1900, $37,541,600; in 1901, $41,675,700; in 1902, $43,525,000; in 1903, $47,300,000; in 1904, $49,400,000.

The above is exclusive of the sales of gas, oil and vapor Stoves. There are some wise Stove merchants who have not kept up with the progress of the American industries who have been led into making the prediction that the Stove trade was a passing industry. Such men have no conception of the continued and steady increase of population and the fact that cooking and heating Stoves are the only Stoves that can be used in the smaller towns and in the country districts, and that these goods are the first and greatest necessities of housekeeping of the great bulk of the entire population.

Much of the increased value in dollars and cents shown by the statistics of the Stove trade is accounted for by the fact that the people are demanding and using better goods from year to year, and the overworked housewife is now demanding the same comforts that her husband is receiving in other directions. She has discovered that it is much easier to do the work of the house with proper facilities. The conclusion, therefore, is that there is no place in the store of any merchant for inferior goods, and this, I take it, is what is meant by the subject given to me, "The Evolution of the Stove Business."

GOOD METHODS IN STOCK TAKING.

BY W. A. JACKSON, DARDANELLE, ARK.

In taking the annual or semiannual inventory a very important feature is a selection of the time. This should be when business is dull and stock the lowest, as well also when the year's business can be closed to show the best results. As a result it will be less trouble for both the clerks who take the stock and the bookkeeper or person whose duty it is to prepare the matter in a book designated for this purpose.

The invoice should show the totals of each line that go to make up the stock in general; for example, the Shelf or Light Hardware as one line, Tin, Galvanized and Enameled Ware another; Stoves and Hollow Ware and such goods as go with the Stove trade another, and so on. By so doing you will have a ready reference to most any part of your stock, should it ever be necessary to refer to any particular thing connected with any past year's business.

GETTING READY.

You can facilitate the work quite a lot by putting in the idle time you have along just previous to the time of stock taking by going through and preparing the stock, by condensing the goods, dusting and getting items of the same kind together. Where the quantity is great you might count and mark the amount of each kind, so when the time comes all that is necessary is to refer to these numbers, which can be done very rapidly. This plan can also be carried out in the heavy lines and in the seasonable goods that have been put away for the time being. When this work has been accomplished the remainder of the work can be carried on without very much trouble. The only really tedious or tiresome part, then, is the transferring from the stock sheets to the invoice book, which is, as a rule, done by some one who is used to this class of work and therefore does not mind it.

As soon as the work of stock taking is over we go through the entire line and renovate the stock, and place it in the very best shape. We also have an opportunity to select any goods that are not selling as rapidly as they should—what is usually termed hard and unsalable old stock—laying them to one side and as soon as possible arranging them in a conspicuous place in the store when every salesman in the house should be instructed to make a special effort to move them as fast as possible.

Stock taking also proves very beneficial in placing future orders of any kind, especially for seasonable goods. Having a memorandum of stock on hand before placing the order frequently prevents over or underbuying of the various lines in question.

It is also advisable during the sale of these seasonable goods that a canvass of the stock be made at least once every two weeks, or oftener if the stock is moving pretty lively. In this way you can keep stock up that is running low without doubling up on sizes and kinds that are not needed.

The annual inventory serves a good purpose and is required by all insurance companies when it comes to adjusting claims in cases of fire, &c., and this is the reason for keeping the work in a book so it may be cared for better and take less room in the safe.

You cannot figure the year's business without the annual inventory, and by it you find if you have made money or not. The stock is placed in a better and more inviting appearance, sometimes by different arrangement and again by putting into use new ideas that have presented themselves to the salesman. New salesmen can get a better knowledge of the stock, location of the different lines, &c., and in a general way the business is benefited every time you go through and make an invoice of the stock.

SPECIAL BRANDS, AND THEIR VALUE TO THE RETAIL HARDWAREMAN.

BY W. T. AVERA, POCAHONTAS, ARK.

Generally when there is no complaint to be made it is hard to discuss a subject. So far as the writer knows there is no complaint about either jobbers' or manufacturers' special brands among the retail trade. We have plenty of them, and among the lot it is easy for each dealer to choose brands of satisfactory quality for himself. So far as we are concerned all we expect is to be able to buy all the goods we want at the right price. The fear that there will ever be a scarcity of either jobbers' or manufacturers' special brands does not in the least bother us. We know that no such thing will ever occur.

If we were of a quarrelsome disposition we could get up some complaint about this subject. For instance, special brands, as the matter now stands, are not our property by a good deal. We might kick about that. It is true that some of us by the grace of the traveling man

who comes to see us have the exclusive sale of certain jobbers' special brands in our town. We find it profitable to handle them, and another reason why we sell them is because we find the article superior in quality and workmanship to any other that we can get. There may also be other reasons, but, as a matter of fact, few of us handle jobbers' special brands because there is any demand that we have not ourselves created for that particular brand. Few jobbers indeed have ever advertised their particular brands to the customer. On the other hand, there are a great many factory brands so well known that we are compelled to carry them in stock.

Personally I handle a certain jobber's special brand quite extensively. The reason I do so is because they are superior in quality and finish to any other that we have ever tried. Perhaps it would not please the jobber, though, to know that our clerks are instructed to keep the jobber's name in the background in selling these goods and to always sell them as our special brand.

To my way of thinking every firm, manufacturer, jobber or retailer should be allowed to have his own special brand if he wants it. I could become quite eloquent on the subject, "Why retailers should have their own special brands."

In order to see just what the value of jobbers' special brands are worth to us, without any reference to quality, let us suppose that 1000 new jobbers should at once start in business, each with a brand of his own. Maintaining the price to the retailer the same as it was before, I fail to see where we would be benefited. It would certainly not cause any more demand for goods than we now have, neither would it lessen the cost of them to us. Again, let us suppose every special brand there is should cease to exist and in its place the same goods should be sold under the same guarantees, only graded strictly instead of branded. What would be the result? It would be like stepping out of a haze into clear atmosphere. Our goods would cost us less, we could therefore sell more of them, and with our own special brands on them we could be master of our own business. This goes to show that a pessimist might find something to complain about in regard to special brands.

A QUESTION OF INDIVIDUALITY.

The question seems to be one of individuality in business. The manufacturer wants his individuality to go on through the jobber and retail dealer down to the consumer. He wants the jobber and retailer to use their money and brains to build up a reputation for him. The jobber is just as bad, as he wants the manufacturer and retailer to do the same thing for him. If the subject was left to the retailer to settle it would come to him about as follows: "As you are not allowed to sell goods under your own brand, you are to say which you prefer, to sell jobbers' or manufacturers' brands." What would he answer? I suspect he would be like Uncle Remus' Br'er Rabbit; he would lay low, chaw his tobacco and say nothing. But he would do some mighty hard thinking. The conclusion he would come to would be about as follows: When I go to buy my goods I am going to look for only two things, one is quality and the other is price. I am not going to allow myself to see what particular brand there happens to be on them, and when I go to sell them I am not going to allow my customer to know that there is anybody else behind those goods but me. If it is a good article and gives him satisfaction he will think of me in connection with it. What do I want him to think of some other fellow away off yonder for?

SOME SPECIAL BRANDS ARE LIKE PATENT MEDICINES,

you never know what they are made of until you try them. The directions, also, are always to take them in large quantities. Whenever I pay a bill for advertising some special, registered, Government behind it for protection, trademark brand of goods, the thought comes to me, You are a chump, you are spending your money to advertise some fellow that is perhaps already worth millions.

This is really the serious part of the subject to retail dealers. Our business is worthless unless we have a reputation of our own behind it. No man or firm can take that away from us. It seems to me that a firm that builds its business up on some one else's special brands is like the man who built his house upon the sands. If our house is to be built upon rock let us take "quality" for our foundation stone, and let "honesty" be our guiding star. Then come what will we will have a good reputation, which is equal to capital in conducting a successful business.

SHOULD HARDWARE DEALERS CONFINE THEIR BUYING STRICTLY TO HARDWARE JOBBERS AND MANUFACTURERS?

BY H. W. PATRICK, RUSSELLVILLE, ARK.

Were I to make answer to this question without comment, I would say: Yes. And still under present conditions I think there are exceptions, which, however, can be reconciled through the efforts of organization. But to give my reasons for an affirmative answer, I think there are several, among them the following: If we expect to have the full co-operation of the Hardware jobber and manufacutrer, is it not just that they have the full co-operation and support of the retail dealer? Consider the different things we ask of them. For instance, that they do not sell consumers, repair or blacksmith shops, grocery, drug or general stores, department stores or catalogue houses.

If we say to the Hardware jobber not to sell grocery stores, as they will use the goods for leaders to help their grocery trade, is it right that we go to the wholesale grocers for Tinware, Galvanized Ware, Nails, Wire, Ammunition, &c., although they should offer some of the things at a little lower price, when in all probability the goods are as inferior in quality as they are low in price? But if the quality is just as good, are we not helping to give them a volume of business that in turn would be an inducement for the manufacturer to show them favors in price or other ways?

I mention the wholesale grocery merely as an example, as what applies in this case applies to all the "variety" jobbers; some of whom look principally to "racket" stores for business and then go to Hardware, grocery, country or general stores to help swell their volume of business, which gives them a leverage on the manufacturer for prices, &c. Why not give the leverage to the Hardware jobbers by throwing the volume of trade to them and then demand favors in return?—which I believe they will gladly give when they understand that the Hardware trade is going to be handled strictly through Hardware channels.

If the buyer for a retail store keeps up with the times, as he should, there will always be enough competition between the different Hardware jobbers and manufacturers to buy goods to meet competition that comes up among the retail trade.

A COLD BLOODED POLICY.

I am aware that there are good Hardwaremen who say, Buy any article from the house you can buy it cheapest from; that merchandising is a war and all things are fair in times of war. Are not Hardware organizations for the purpose of putting an end to war, acting as a peace commission to bring Hardware interests from manufacturer to consumer to a harmonious, peaceful condition, and like war of nations when peace negotiations fail be prepared to get justice by force? That old saying, "many men of many minds," applies to Hardware dealers the same as to mankind at large. Some go into business simply for the cold, hard, almighty dollars, and as soon as they get them in their grasp use them for nothing but to make other dollars, and when their coffers are filled write over them in big, shining letters, "Success," regardless of the hardships and losses it may have cost others who are honestly struggling for an existence. I believe the successful business man is the one who, while using his time and energies for necessities, comforts and luxuries for his own and himself, and laying up something for a possible rainy day, at the same time scatters some sunshine for his fellow man; and the greatest benefit to ourselves and

others can only be derived through good will and good feeling all along the line from manufacturer to consumer.

As stated before, there may be exceptions to the present state of affairs among the trade in confining their buying to strictly Hardware concerns, but, if so, is it not a condition that should be regulated so as to throw the Hardware trade into the channels where it belongs? This can only be done by organization and an understanding between the different Hardware interests. Then the buyer who keeps up with the times will have plenty of opportunity for buying the right goods from the right people at the right price. I believe our best jobbing houses are doing business on honest methods, and are interested in the welfare of their retail customers, knowing their own success depends on the success of the retailer.

AN INDUCEMENT FOR PROTECTION.

There is a great deal of thinking and self educational work needed all along this age of rush, push and progress, with conditions and circumstances continually changing, to be able at all times to buy intelligently. When thus prepared the buyer will always be able to find some Hardware jobber or manufacturer ready to supply his wants in the right way. And when they see their goods can be disposed of to as good advantage in both quantity and price through the strictly Hardware trade it will be an inducement for them to protect the retailer against "racket" store jobbers, department stores and other piratical trade.

It is natural and just that the manufacturer of Hardware has more interest in the strictly Hardware jobber and retailer than he has in the "variety" jobber. I believe Hardware jobbers are both a convenience and a necessity to the retailer. They act as warehousemen for us through their well regulated mail order departments, and with frequent visits from their traveling men and the quick transportation facilities we have we can nearly always be sure of getting goods for stock or special orders for customers on very short time.

These and many other things they willingly and gladly do for us because they know the retailer's interest is their interest, the same as the prosperity of the retailer's customers means prosperity for him, while the miscellaneous jobber is generally more directly interested in some competitor in the way of general merchandise, department or "racket" stores than the strictly Hardware retail merchant. Should we not through our State and national associations strive to the end that the Hardware trade be handled straight through Hardware people—manufacturer, jobber and retailer?

BEST METHODS OF REACHING COUNTRY TRADE; WHETHER BY NEWSPAPERS, PERSONAL LETTERS OR OTHERWISE.

BY CHAS. F. PITTMAN, PRESCOTT, ARK.

This question of reaching country trade means more to the Hardwareman than to a dealer in most any other line, and if it can be correctly solved the Hardwareman's success is assured. The latter part of this question really answers the former; the best method of reaching the country trade is by newspapers, personal letters and otherwise. Otherwise includes personal visits, acquaintance, activity and training of clerks, circular letters, selection of stocks, the influence of friends, the condition of the house and the general air about the place where the goods are to be sold. It is hardly necessary to discuss these methods comparatively, since not one of them could accomplish much without the aid of the others. All these means really combine to make one method, the method of going after it.

NEWSPAPER ADVERTISING MUST BE SUPPLEMENTED BY GOOD SERVICE.

To the average farmer, who either owns his own place or is endeavoring to do so, the man whose residence is fixed, who buys your Hardware and Implements, and who is able to pay for them, the local newspaper which gives account of the happenings in his own neighborhood and in his own county is quite an item of interest each week and every article is read, including the advertisements. Now, when a dealer's ad. appears in every issue, talking the usefulness, adaptability and merit of one article for two or three weeks, of another article for the next two or three weeks, this farmer's interest is aroused, and the next thing—it may take some time—you will see him in your store. If your clerks are well trained and the stock has been bought with the farmer's need in mind a sale is consummated and a profit made. Thus this farmer's trade has been reached by the newspaper, the training of the clerk and the selection of stock. I will leave it to the advertising man to discuss how one's ad. should be gotten up, how often it should be changed, whether or not prices should be given and how it can be made interesting and instructive.

PERSONAL LETTERS ARE GOOD,

and the only objection, in my opinion, that can be brought against them is the time and expense of getting them out and the fact that they cannot be made as general as newspaper advertising. We use them in our business to some extent, especially in pushing some particular article that we have a reason to believe the party addressed is interested in. Usually in the spring we use them soliciting the accounts of responsible farmers, whom we would be glad to have trade with us on credit, and to whom credit is an accommodation. In this way if we secure the farmer's spring and summer trade we are in good position to get his fall and winter business. Of course in this case you have to know your man, and in writing personal letters it is a mighty good thing to be on speaking terms with your man. We sometimes use personal letters to reach the farmer that has quit trading with us on account of some supposed wrong, and have been successful in some instances; but never do this when it is at all practicable to make a personal visit and talk the matter over with him.

PERSONAL INTERVIEWS AND ARGUMENTS.

Personal visits and talks are sometimes almost absolutely necessary to reach the farmers' business, especially in pushing articles that are not well introduced. Nearly every Hardwareman in Arkansas realizes this when he stops to think how his harvesting machinery business has been secured. And the better the man he sent out to make these visits the greater was the business gotten, not only in the line he set out particularly to sell, but also in other lines that his salesman talked about. His business was strengthened when the salesman's enthusiasm led him to talk about the sociability and honesty of his boss and fellow workers, the reputation for liberality, honesty and straightforwardness that his house justly enjoyed, its inclination always to do the right thing, the equity of value and price. Business was reached in this way that probably could not have been reached by newspapers, personal letters or otherwise.

It is comparatively easy to find out the people who buy Hardware and Implements, and if you already know them, to stop them for a few minutes on the street, ask about their crops and their families—for if one is in earnest about one's business his interest in these matters is sincere—and then bring up your own business for discussion. If you don't happen to know the man personally the average American, and especially the Arkansas farmer, is easy of approach and usually willing to be friendly. Make his acquaintance, solicit his business, invite him around to your store; if possible take him there and introduce him to your clerks. Here comes in the activity and training of your clerks. They are good fellows (I mean in a strict sense), they make him feel at home, are willing and capable of telling and showing him anything about the business.

If you don't bring your man to tow the first time think to tell the boys about him, and if they are the right kind—and you don't need them unless they are—sooner or later you will be gratified by seeing this same stranger trading at your counters. Your clerks can do this part of the business as well as yourself, and if they are properly trained and properly paid they will by their own efforts secure for you quite a large portion of the farmers' trade. When a new clerk is hired in the neighborhood the sign is not quite right unless some new customers put in their appearance.

IN THE FALL AND SPRING,

when there is money in the country and people are trading for cash, we issue a circular letter describing goods, quoting prices and urging the farmers to come to see us. It is an easy matter to prepare some specials, and we endeavor to get out as many of these letters as possible during the market season. We find it pays better, considering the time and expense, than almost any other method. On special days, when there is a crowd of any kind in town, we get out an ordinary dodger with some leaders to attract attention.

On these days, if it is warm, we have our belt driven fans running, plenty of ice water, lots of chairs, and assume an air of hospitality that we really feel. We try, however, to keep this sort of feeling the year round. The clerks are in a good humor and accommodating, and when any one comes in he is treated cordially and made to feel welcome—even the traveling men, who run our business for us. When this method of keeping your eyes skinned and using all your energy and intelligence in going after the farmers' trade is pursued, if you have given good values along with good fellowship and polite treatment, you will be rewarded by these farmers gladly and freely giving their support and influence to secure for you their neighbors' trade.

CATALOGUE HOUSE COMPETITION.

BY W. W. WEBBER OF THE WEBBER-AYERS HARDWARE COMPANY, FORT SMITH, ARK.

There is perhaps no competition so severe and relentless and unfair as the competition of the catalogue houses—a competition made possible by the practice of making the price according to the quantity bought and no other consideration entering into the sale. The catalogue house people have seized on this practice and have used it to build themselves up. They have realized from the start that there was no way for them to break down the retail trade of the country so effectually as to be able to undersell the retailers and in that manner cast doubt and suspicion on them as a class—doubt as to their fairness to the consumer, suspicion that they are seeking to get from the consumer more than a legitimate profit for the goods.

This suspicion the catalogue houses seek to fasten on the retailers and make it a permanent doubt in the minds of the consumer by quoting at low prices goods that by long years of effort the retailers have made standard and well known throughout the country.

There is only one remedy for this, and that is to get the manufacturers to treat us fairly; but, says one, Is not the manufacturer justified in selling a large quantity at a less price than a small quantity? There is only one answer to that question, and it is yes and no. Yes, if to legitimate business houses. No, if to houses that expect to use the goods as a lever to build up trade by breaking down competition. The duty of the manufacturer to know into whose hands his goods are going and to know how they are to be used has not been as sharply defined in these late years of stewardship as it should be, when the idea has seemed to be to undertake to sell all the goods the manufacturer could make, regardless of all other considerations.

COMPETITION IS THE LIFE OF TRADE IF

it is a healthy one, and should be encouraged. Any individual, company or trust having the exclusive trade is sure to excite criticism, even though the price asked is low. So it is much better to have competition, but if based on the principle that the best way to build up business is to cut the prices of competitors it is simply to cut off your own nose to spite your neighbor, for you are the greatest sufferer every time.

If the manufacturer was judicious in giving quantity prices no fault could be found, but when he gives 5 per cent. of his trade better average prices than the jobbers, who handle 95 per cent., and justifies himself by saying that the 5 per cent. buyer is better and prompter pay than the 95 per cent. buyer and buys in larger quantities than any single jobber, with but very few exceptions, I think it is time to enter our protest in as vigorous a manner as possible. Why a weapon should be put into the hands of 5 per cent. of the manufacturer's customers to paralyze the balance passes my understanding.

ANOTHER PHASE OF THE QUESTION

looms up rather portentously and that is the aid given to the catalogue houses by the Government by the remarkable facilities in the Post Office Department—that is, the transportation of merchandise by mail up to 4 pounds at prices that are a continual loss to the Government, which you and every one else who writes letters has to help to pay. Our Government is not a money making institution—it is a political institution—but there should be business enough about it so that the public money should not be needlessly squandered.

At the present time a strong effort is being made to develop the postal laws so that the Government shall become a common carrier, thus entering into direct competition with its citizens. The result of such competition would be here, as it has been in other countries, a comparative failure. I say comparative, because it would not be a failure as long as the taxpayer would foot the bills, but a complete failure as compared with the economical methods of private enterprise.

There is a 12-pound postal rate in England, and as there are no express companies anything over 12 pounds goes by freight. There is no express service in Germany; all the transportation facilities are controlled by the Government. In Australia the parcels post has been developed to such a degree that it is driving all the business of the country to the large cities, to the damage and inconvenience of the country people.

CATALOGUE HOUSES WOULD REAP THE BENEFIT.

Now look on the other side of the question. In the United States there is a better and more complete express service than there is in any other country on the globe. The public is better accommodated, and at prices that justify the use of the system, than any other people. Should the proposed postal legislation be made into laws who would receive the greatest benefit? There is no question that the catalogue house would be benefited far more than any other class. Well, why not put the consumer in as first? Does he not get his supplies cheaper? In a way he does, but in a much larger way he does not. He does not select his purchases. He has no choice but to take what is sent him. His money goes out of his community never to return, and the method is a constant drain on his resources, without any redeeming qualification.

His home merchant who helps him pay the taxes of the community is handicapped by the loss of trade and is less able to buy goods for the customer's convenience and wants. The catalogue house never pays any tax and is simply a leech on every community that is supplied by it. Why should the Government carry goods at a loss for the benefit of the catalogue house and we who get no benefit have to foot the bills?

NO PATERNALISM.

The proposition that the Government should go into the transportation business is wrong. As I have said, the Government is not a business institution, but a political one, having only the duty to enact laws for the protection of all classes, without favor to any. We are in danger of forgetting this because of the evils that have crept into our great railroad and other public utilities, but we must not forget the place our Government occupies toward the people and insist that Government control or ownership is a solution of the problems that confront us, for that would not be a solution, but a step toward paternalism, and surely we are not ready for that.

Let the Government look after our political interests and let the people look after the business interests, bearing in mind that equity and honesty are just as much business assets as ever they were and that fair dealing has a commercial value far above trickery and sharp practice and will live and be a potent factor in business when the others are crowded out with shame and failure; and when the manufacturer comes to a full realization that he cannot sell 5 per cent. of his trade at prices the same

as he gives his jobbing trade, with any hope that his jobbing trade will be able to find customers, then the solution of this problem will be in sight.

PRICE-LISTS, CIRCULARS, &c.

Manufacturers in Hardware and related lines are requested to send us duplicate copies of catalogues, price-lists, &c., one copy for our Catalogue Department in New York and another for our London office; and at the same time to call our attention to any new goods or additions to their lines, of which appropriate mention will be made besides the brief reference to the catalogue or price-list in this column.

HERBERT STORY, 23 Duane street, New York: Illustrated sheet of silk weavers' Tools for the Hardware trade and jobbers in Mill Supplies, including Reed, Shuttle, Mail and Harness Hooks, Pickers, Twisting, Entering and Warping Hooks, Pick-Packs, &c.

ART METAL CONSTRUCTION COMPANY, Jamestown, N. Y.: Catalogues relating to Metallic Fixtures, Filing Devices and Furniture, Steel Wardrobes, Fire Proof Vaults, Bank and Library Equipments, &c.

E. L. SIBLEY, Bennington, Vt.: Catalogue of Stationers' Hardware Specialties, Punch and Eyelet Presses, Fasteners, &c.

BUFFALO FORGE COMPANY, Buffalo, N. Y.: General catalogue No. 167 relating to Forges, Blacksmith Tools, Power Blowers and Exhausts, Heating and Ventilating, Pumps, Ventilators, &c.

NAYLOR BROS., Peekskill, N. Y.: Catalogue price-list No. 4, devoted to Pulleys, Hangers, Shafting, Mule Pulley Stands, Pillow Blocks, Couplings, Collars and Power Transmitting Machinery.

ROLLMAN MFG. COMPANY, Mount Joy, Pa.: Postal folder, attractively gotten up, extending the best wishes of the company to its customers in connection with the celebration of Independence Day.

MERIDEN CUTLERY COMPANY, Meriden, Conn.: Booklet calling special attention to the Anvil Brand as a trademark which is used on Carvers and on all fine goods with unplated blades in rubber, celluloid or ivory handles; also on Butcher Knives as a guarantee of best quality and workmanship. The company refers to its line of Stag Carvers as especially complete.

CHALLENGE WIND MILL & FEED MILL COMPANY, Batavia, Ill.: General catalogue relating to Steel Wind Mills and Towers, Pumps, Tanks, Feed Mills, Corn and Cob Crushers, Sweep Grinders, Shells, Feed Cutters, Wood Saws, Horse-Powers, &c.

FLINT & WALLING MFG. COMPANY, Kendallville, Ind.: Illustrated booklet relating to Star Wind Mills and the company's manner of selling them.

KNAPP & SPENCER COMPANY, Sioux City, Iowa: A budget of leaves for insertion in the company's loose leaf catalogue.

E. H. SHELDON & Co., 271-285 Madison street, Chicago, Ill.: Catalogue of Manual Training specialties, including Clamps, Wood Workers' Vises, Tools, Benches, Lathes, Miter Vises, Bench Stops, &c.

BUTLER BROTHERS, New York: Catalogue, prices in which went into effect June 26. These prices, for merchants only, are guaranteed during July or until the company issues its August catalogue.

MOSS MFG. COMPANY, Baltimore, Md.: Illustrated sheet No. 7 devoted to Window Frame Pulleys; also circular relating to Pulley Mortiser, Boring Bits and Sash Pulley Machine Gauges.

S. R. SLAYMAKER, Lancaster, Pa.: Catalogue No. 40, 107 pages, illustrating a large line of Padlocks for various purposes; also Night Latches, Railroad, Dog Collar and special Locks, the latter made to order only.

HALL-ROBERTSON HARDWARE COMPANY, Fargo, N. D.: A number of extra leaves for insertion in its loose leaf catalogue.

LEHMAN BROTHERS, 10 Bond street, New York: Illustrated booklet with price-list on Lehman Heaters for carriages, automobiles, delivery wagons and sleighs.

GLEASON-PETERS AIR PUMP COMPANY, Houston and Mercer streets, New York: Illustrated catalogue of Hand, Foot, Storage and Cylinder Pumps, Gauges and Sundries.

GEO. W. SOUTHWICK COMPANY, 88 Center street, New York: Booklet, entitled "Polar Belt Dressing in Relation to Transmission of Power by Belting."

THE ALTHOUSE-WHEELER COMPANY, Waupun, Wis.: Pamphlet relating to Wind Mills, Wooden and Steel Wheels for pumping and Vaneless Folding Wood Wheel Power Mills.

NOERA MFG. COMPANY, Waterbury, Conn.: Catalogue No. 11, devoted to Oilers, Lamps and Hardware Specialties; also one relating to Automobile and Bicycle Pumps and Sundries.

MASSACHUSETTS SAW WORKS, Chicopee, Mass.: Large and striking hanger calendar for the year commencing June, 1905. At the bottom of the calendar are attached samples of the company's Hack Saw Blades, regular, medium, fine and very fine pitch.

AMONG THE HARDWARE TRADE.

O'Shea & Hinch Hardware Company, Fort Smith, Ark., has been incorporated with an authorized capital of $25,000 to conduct a wholesale and retail business in Shelf Hardware, Stoves, Tinware and Agricultural Implements.

Morris Hardware Company, Youngstown, Ohio, is about to erect a three-story brick warehouse, costing $60,000, which will be the largest in the city.

W. N. Farlow, David City, Neb., has sold his business to J. T. Baughan, who will deal in Shelf and Heavy Hardware, Stoves, Sporting Goods, &c., under the style of J. T. Baughan & Co.

Girder-Wilson-Manning Company, Leonard, Texas, has been incorporated to transact a retail business in Hardware, Tinware, Agricultural Implements, furniture and Vehicles. Capital stock, $20,000.

Helena Hardware Company, Helena, Okla., has bought out Walker Bros., handling Shelf and Heavy Hardware, Stoves, Paints, Sporting Goods, Saddlery and Carriages.

Adams Hardware Company, Ashtabula, Ohio, with a capital of $10,000, has been incorporated by F. R. Hogue and others. Officers: J. G. Mitchell, president; E. N. Goddard, vice-president; H. E. Adams, secretary and treasurer.

P. F. Cahill, St. Edward, Neb., has sold his Hardware business to William Eidam, formerly of Scribner, Neb.

Heat and Light Gas Burner.

The Twentieth Century white flame heat and light gas burner, shown herewith, attaches to chandelier, wall bracket or portable gas stand. It is quickly placed on

Heat and Light Gas Burner.

any gas fixture and when lighted produces both heat and illumination at the same time at one cost. It is stated that the combustion is perfect and that there is no odor or dirt. The device is offered by the Twentieth Century Mfg. Company, 19 Warren street, New York.

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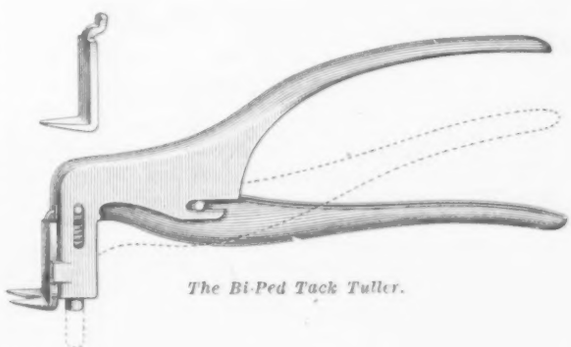
The Imperial Rotary Washer.

The new washing machine shown herewith is offered by the Blackstone Mfg. Company, Jamestown, N. Y. The tub is well made, closing tight to retain the heat in the water. The washer is painted, grained and varnished, while all castings are finished in gold and aluminum bronze. Being bolted in place the legs can easily be removed when necessary. The machine is built with a sliding cylinder on a square post, insuring strength and rigidity, and has roller bearings, which, it is stated, give high speed with ease and make it, when loaded with clothes, practically noiseless. The dasher is made of hard wood, while the dasher post is of cast iron, heavily galvanized so as to prevent rusting and consequent staining of the clothes.

The Imperial Rotary Washer.

The Bi-Ped Tack Puller.

The General Specialty Company, Philadelphia, is the originator of a new tack puller having two interchangeable feet, as illustrated herewith. It is made of high grade steel and is described as strong, simple and durable. The foot with the V-shaped opening is for taking up the ordinary tacks used in laying carpets. The other is chisel shaped and adapted to pulling double pointed matting tacks. Both feet are operated by the device in such a way as to lift the tacks straight up without bending, thus preserving them practically as good as new. The tacks can also be withdrawn without danger of injury to covering or floor.



The Bi-Ped Tack Puller.

WALTER M. TAUSSIG, president of Wiebusch & Hilger, New York, who went to Europe May 10 on a business trip to England and Germany, returned on the steamer Crown Prince, arriving in New York June 20, his principal business abroad being to visit the manufacturers with whom the house does business.

The Neverbreak Clamp.

The Samuel C. Tatum Company, Cincinnati, Ohio, New York office 174 Fulton street, is offering the clamp shown herewith. The bar is of heavy special spring steel to avoid twisting or buckling. The head stock and screw are made with a special round bottom thread, the thread in the head stock being of steel, cast in the head stock casting. The trigger or dog is of tool steel. The notches on the bar are 1 inch apart to insure quick action. The satin wood handle is attached to the malleable crank with a ⅜-inch polished steel rivet to prevent breakage or bending of the handle if accidentally dropped. All parts are interchangeable, and should parts be required through accident or other cause they can be purchased, it is remarked, with the assurance that they will fit. The clamp is made in five sizes, to open from 2½ to 6 feet.

The Neverbreak Clamp.

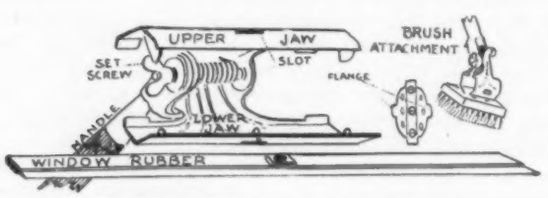
Mayhew's Bit Extension.

H. H. Mayhew Company, Shelburne Falls, Mass., is putting on the market the bit extension shown herewith. It is made with hardened steel jaws loosely riveted on the tang of the extension proper. The interior jaws are so shaped that any square shank bit can be held by screwing the loose sleeve to the jaws. A quick acting thread is used, requiring two, or probably three, turns to allow any bit to be entered or removed. The shell is of steel tubing, with internal thread meshing with threads of the extension proper. The exterior of the shell is knurled to facilitate operations. There are no loose or separate parts to the tool, everything being self contained. It is referred to as being so strongly made that it will stand a great deal of abuse, and the company's guarantee is behind every tool. It will follow a ⅝-inch hole, and is made in 12, 15, 18, 24, 30 and 36 inch lengths measured over all.

Mayhew's Bit Extension.

The Modern Window and Floor Cleaner.

Forbes Chocolate Company, 74 Frankfort street, Cleveland, Ohio, is offering the window and floor cleaner shown herewith. It consists of a pair of jaws with a coiled spring axle, to which is attached a set screw. The spring is of heavy wire to hold the jaws together firmly. The window rubber is inserted by placing the rubber holder, which is a galvanized strip of iron, in the jaws so that the middle tooth of the under jaw projects into the hole in the galvanized strip. The outer teeth are set back a little further than the middle tooth to act as a guide to keep the rubber rigid and in place. By letting the jaws spring together the rubber is held in place. A heavy rubber for cleaning porch floors accompanies the device, and is inserted in the same manner as the window rubber. Two brush attachments are also furnished, one for window brushes and the other for scrubbing brushes. One of these attachments is shown at the right hand of the illustration. On this attachment there are two flanges, and to insert the brush in the holder the flanges are passed through the slot in the upper and lower jaw and the jaws are sprung shut. A cloth may be thrown over the brush for wiping down ceilings and walls. The jaws are adjusted by means of the set screw to any desired angle. The holder can be attached to any ordinary handle like a mop handle.



The Modern Window and Floor Cleaner.

The Eclipse Bread Mixer and Kneader.

The accompanying cut illustrates a bread kneading machine made by the Sumner Mfg. Company, 229 Franklin street, Boston. A glance will make its construction and manner of operation entirely clear. The frame screws firmly to a table edge and holds the blade or dasher fixed while the pail turns around it on a base operated by a pair of beveled gears. By means of three rings the pail is securely fastened to the arms of the base as indicated. The machine is easy to clean and can be taken apart and set up again in a few moments. To make bread the flour, water and other ingredients are put into the pail and the handle turned for three minutes, when, it is stated, a better and much cleaner dough is obtained than can be made with the hands in a quarter of an hour or more. The point is also made that the bread will be exceptionally wholesome on account of the powerful kneading action of the machine.

The Eclipse Bread Mixer and Kneader.

Stocking's Simplex Straining and Seeding Press.

The 4-S-Food Press Company, 70 Warren street, New York, is manufacturing Stocking's simplex straining and seeding press, shown in the accompanying illustrations. The set consists of four pieces—No. 1, general straining pan; No. 2, seeding pan; No. 3, plunger of hard wood,

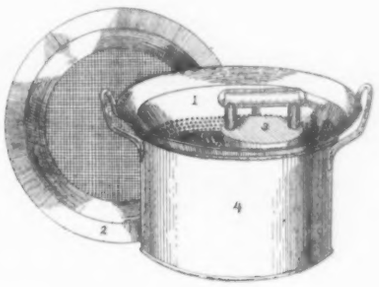


Fig. 1.—Stocking's Straining and Seeding Press.

and No. 4, enameled ware handled receiving pan. The enameled receiver is 9 x 5⅛ inches and holds about 3 quarts. The straining pans, of block tin, have strainers of perforated metal, perfectly smooth both sides, for easy

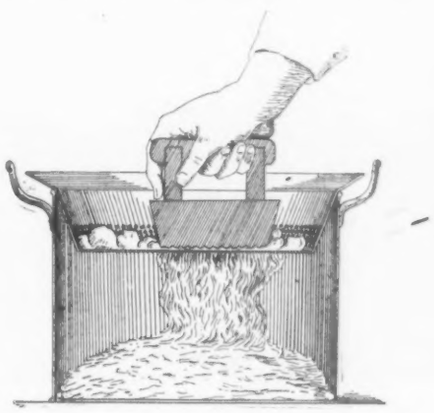


Fig. 2.—Sectional View of Press.

cleansing, instead of being made of wire cloth. One of the strainers for general use has perforated sides and bottom, the holes being about 1-16 inch diameter, the other pan for straining fruit juices being perforated at bottom only and having much smaller holes. The

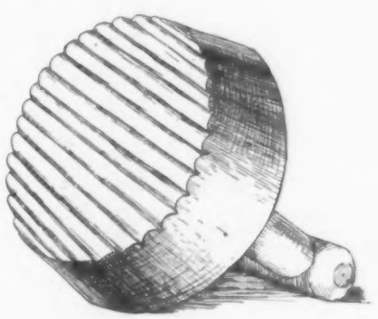


Fig. 3.—Hard Wood Plunger or Masher.

plunger or masher with corrugated bottom is 4 x 3½ x 1½ inches in size, with a bevel or flare of the same angle as the straining pans, as seen in the sectional view, Fig. 2, which greatly facilitates the filtering or straining processes. It is said a gallon of stewed pumpkin can be strained in 60 seconds, 2 quarts of apple sauce in 30 seconds, and soups, broths, gruels, gravies, &c., very rapidly. Potatoes, turnips, peaches, prunes, sweet potatoes, cold cereals and kindred foodstuffs are some of the materials which can be rapidly and easily reduced to a fine grained body without destroying the structural integrity of the food and making it pasty and starchy. The finer perforations in pan No. 2 are better suited to straining the juices from strawberries, raspberries, blackberries, cranberries, currants and other fruits; also straining tomatoes. With this device results can be obtained quickly without burning or staining the hands, as when cheesecloth bags, &c., are used, and the freedom from seams in the utensils makes it easy to keep all the parts in a sanitary and hygienic condition. The goods are well packed to prevent injury in shipping and with each set a book of recipes is given for preparations requiring treatment of the nature described.

Naponach Pocket Knife Tool Kit No. 602.

The Naponach Knife Company, Naponach, N. Y., for which U. J. Ulery, 7 Warren street, New York, is domestic and foreign representative, has just brought out the

Naponach Pocket Knife Tool Kit, Half Size.

pocket knife tool kit here shown. The case is of tan colored calfskin, neat in appearance, size 4½ x 3¼ inches, in form as illustrated, the flap being held by snap glove buttons. Inside the case are leather compartments to hold each particular tool as well as the knife itself. The knife proper is 3⅞ inches over all when closed and of strong, durable character. In the end opposite the blade is a strong rivet and spring, so that as any one of the five tools is wanted the particular article can be caught under the rivet in the slotted hook and forced open, when the stout back spring holds the part securely in place. The reamer is 3⅛ inches long, file 4 inches, saw 4 inches, chisel 3⅝ inches and screw driver 3¾ inches long over all. For instance, with the saw in place the total length of tool is 7¼ inches, the body of the knife being large enough to furnish an adequate grip. This makes a good emergency kit to carry about, especially for autoists, cyclists, campers, or even about home for doing the endless small jobs not requiring the services of a skilled mechanic. The tools are said to be made of the best materials by skilled workmen and are sold with an unlimited warranty.

Steel Mortar and Brick Hods.

The mortar hod shown in Fig. 1 is made of 18 gauge metal, strongly reinforced at the dumping end, and all the edges are reinforced by wire edge. The back end of

Fig. 1.—Steel Mortar Hod.

the hod is referred to as being of extra hight, also as having a projecting edge, which strengthens it. The bottom is rounded, making it easier to clean and affording a free delivery of the mortar. The handle socket is made of stamped sheet metal and has necessary adjustments to take up shrinkage in the selected hard wood

Fig. 2.—Steel Brick Hod.

handle. The brick hod, Fig. 2, is heavily reinforced on the upper edges, also on the dumping point. Legs are provided to keep the head off the ground when loading. The hods are offered by the Avery-Caldwell Mfg. Company, Bellaire, Ohio.

New Vulcan Horse Nail.

The Fowler Nail Company, Seymour, Conn., has recently put on the market a new pattern horse nail, two views of which are here shown. This company 40 years ago inaugurated the manufacture of pointed horse nails branded Vulcan, the production of which revolutionized the making of horse nails. One of the strongest features of the new nail is a reinforced chisel point with flat bevel and square edges. A close view of the illustrations

Fig. 1.—Improved Vulcan Horse Nail.

will show that the nail at point of bevel is a trifle thicker than at point of clinch, which is very desirable, as it not only insures strength and true driving qualities, rendering it impossible to turn in the foot, but prepares the way for the blade and it is said makes impossible any splitting of hoof. Other important details emphasized by the company are the set of nail, the well proportioned head, which is always in the center, and designed to fill crease in shoe and blade referred to as perfect in finish and so smooth that it has a burnished appearance besides being well tapered and of uniform length. Concerning the

Fig. 2.—Side View of Nail.

quality, we are advised all the material is imported from Sweden, being made especially for this use and of the highest grade. The machinery is of recent construction and most modern type, the adjustment of which is such as to automatically stop a machine in case of an imperfect blank. The machines on which these horse nails are now made differ radically from other machines for such purposes in many ways, but particularly in that two rods are fed in simultaneously instead of one rod at a time, making four nail blanks at every revolution instead of one. The company is now prepared to supply all sizes in regular or city heads, and samples will be mailed to applicants. An extension to the plant is now in course of construction, 68 feet long and two stories high, to furnish additional facilities for producing this nail.

PAINTS, OILS AND COLORS

White Lead, Zinc, &c.—

	₱ lb
Lead, English white, in Oil	9½@ 9¾
Lead, American white, in Oil:	
Lots of 500 lb or over	@ 6½
Lots less than 500 lb	@ 7
In Barrels	@ 6
Lead, White, in oil, 25 lb tin pails, add to keg price	@ ½
Lead, White, in oil, 12½ lb tin pails, add to keg price	@ 1
Lead, White, in oil, 1 to 5 lb ass'ted tins, add to keg price	@ 1½
Lead, American. Terms: For lots 12 tons and over ¼¢ rebate; and 2% for cash if paid in 15 days from date of invoice; for lots of 500 lbs. and over 2% for cash if paid in 15 days from date of invoice, for lots of less than 500 lbs. net.	₱ lb
Lead, White, Dry in bbls	@ 6
Zinc, American, dry	4¾@ 4¾
Zinc, French:	
Paris, Red Seal, dry	8¾
Paris, Green Seal, dry	9¾
Antwerp, Red Seal, dry	7¾
Antwerp, Green Seal, dry	8¾
Zinc, V. M. French, in Poppy Oil:	
Green Seal:	
Lots of 1 ton and over	11⅝@12¼
Lots of less than 1 ton	11¾@12⅜
Zinc, V. M. French, in Poppy Oil:	
Red Seal:	
Lots of 1 ton and over	10⅜@10⅞
Lots of less than 1 ton	10⅝@11¼

Discounts.—French Zinc.—Discounts to buyers of 10 bbl. lots of one or mixed grades, 1%; 25 bbls., 2%; 50 bbls., 4%.

Dry Colors—

	₱ lb
Black, Carbon	5 @10
Black, Drop, Amer	4 @ 6
Black, Drop, Eng	5 @15
Black, Ivory	16 @20
Lamp, Com	4½@ 6
Blue, Celestial	4 @ 6
Blue, Chinese	29 @32
Blue, Prussian	27 @30
Blue, Ultramarine	4½@15
Brown, Spanish	¾@ 1
Carmine, No. 40	$3.50@3.60
Green, Chrome, ordinary	3½@ 6
Green, Chrome, pure	17 @25
Lead, Red, bbls., ½ bbls. and kegs:	
Lots 500 lb or over	@ 6½
Lots less than 500 lb	@ 7
Litharge, American, bbls	6 @ 6½
Ocher, American	₱ ton $8.50@16.00
Orcher, American Golden	2½@ 3½
Orcher, French	1¾@ 2½
Orcher, Foreign Golden	3 @ 4
Orange Mineral, English	8 @10
Orange Mineral, French	10½@11¾
Orange Mineral, German	7⅝@10
Orange Mineral, American	8 @ 8¾
Red, Indian, English	4½@ 8½
Red, Indian, American	3 @ 3¼
Red, Turkey, English	4 @10
Red, Tuscan, English	7 @10
Red, Venetian, Amer.	₱ 100 lb $0.50@1.25
Red Venetian, English	100 lb $1.15@1.75
Sienna, Italian, Burnt and Powdered	3 @ 9½
Sienna, Ital., Raw, Powd	3 @ 6½
Sienna, American, Raw	1½@ 2
Sienna, American, Burnt and Powdered	1½@ 2
Talc, French	₱ ton $15.00@30.00
Talc, American	₱ ton 15.00@25.00
Terra Alba, French	₱ 100 lb 90 @1.00
Terra Alba, English	₱ 100 lb 90 @1.00
Terra Alba, American, ₱ 100 lb., No. 1	60 @70
Terra Alba, American, ₱ 100 lb., No. 2	45 @50
Umber, Turkey, Bnt. & Pow	2½@ 3½
Umber, Turkey, Raw & Pow	2½@ 3½
Umber, Burnt, Amer	1½@ 2
Umber, Raw, Amer	1½@ 2
Yellow, Chrome	13 @16
Vermilion, American Lead	10 @25
Vermilion, Quicksilver, bulk	@65
Vermilion, Quicksilver, bags	@66
Vermilion, English, Import	75 @80
Vermilion, Chinese	$0.90@1.00

Colors in Oil—

	₱ lb
Black, Lampblack	12 @14
Blue, Chinese	26 @46
Blue, Prussian	32 @36
Blue, Ultramarine	13 @16
Brown, Vandyke	11 @14
Green, Chrome	10 @15
Green, Paris	@24
Sienna, Raw	12 @15
Sienna, Burnt	12 @15
Umber, Raw	11 @14
Umber, Burnt	11 @14

Miscellaneous—

Barytes, White, Foreign	₱ ton $17.50@19.00
Barytes, Amer. floated	₱ ton 18.00@19.00
Barytes, Crude, No. 1	₱ ton 10.00@11.00
Chalk, in bulk	₱ ton 3.00@ 3.25
Chalk, in bbls	₱ 100 lb .@ .35
China Clay, English	₱ ton 11.00@17.00
Cobalt, Oxide	₱ 100 lb 2.50@ 2.60
Whiting, Common	₱ 100 lb .43@ .48
Whiting, Gilders	₱ 100 lb .50@ .55
Whiting, Ex. Gilders	₱ 100 lb .55@ .60

Putty, Commercial—₱ 100 lb

In bladders	$1.75@1.80
In bbls. or tubes	1.10@1.15
In 1 lb to 5 lb cans	2.05@2.95
In 12½ to 50 lb cans	1.45@1.60

Spirits Turpentine—₱ gal.

In Oil bbls	59½@60
In machine bbls	60 @60½

Glue—

	₱ lb
Cabinet	11 @15
Common Bone	7 @ 9
Extra White	18 @24
Foot Stock, White	11 @14
Foot Stock, Brown	8 @11
German Hide	12 @18
French	10 @40
Irish	13 @16
Low Grade	9 @12
Medium White	14 @17

Gum Shellac—

	₱ lb
Bleached Commercial	31 @33
Bone Dried	42 @43
Button	26 @45
Diamond I	50 @52
Fine Orange	40 @45
A. C. Garnet	35 @36
D. C	65 @..
Octagon B	@46
T. N	34½@36
V. S. O	47 @..

Animal, Fish and Vegetable Oils—₱ gal

Linseed, City, raw	50 @51
Linseed, City, boiled	52 @53
Linseed, State and West'n, raw	48 @49
Linseed, raw Calcutta seed	@60
Lard, Prime, Winter	57 @59
Lard, Extra No. 1	47 @48
Lard, No. 1	35 @39
Cotton-seed, Crude, f.o.b. mills	21½@22
Cotton-seed, Summer Yellow, Prime	27½@28
Cotton-seed, Summer Yellow, off grades	@..
Sperm, Crude	55 @..
Sperm, Natural Spring	@..
Sperm, Bleached Spring	@..
Sperm, Natural Winter	60 @63
Sperm, Bleached Winter	63 @65
Tallow, Prime	51 @53
Whale, Crude	@..
Whale, Natural Winter	42 @44
Whale, Bleached Winter	44 @46
Menhaden, Brown, Strained	28 @29
Menhaden, Light, Strained	29 @30
Menhaden, Bleached, Winter	31 @32
Menhaden, Ex-Bld. Winter	32 @33
Menhaden, Southern	16½@17
Cocoanut, Ceylon	₱ lb 6¼@ 6½
Cocoanut, Cochin	₱ lb 7¼@ 7⅝
Cod, Domestic, Prime	34 @36
Cod, Newfoundland	39 @41
Red Elaine	29 @32
Red, Saponified	₱ lb 3⅝@ 4¾
Olive, Italian, bbls	53 @57
Neatsfoot, prime	49 @50
Palm, Logos	₱ lb 5¼@ 5⅝

Mineral Oils—

Black, 29 gravity, 25@30 cold test	₱ gal. 10¼@11½
Black, 29 gravity, 15 cold test	11¼@12½
Black, Summer	10¼@11½
Cylinder, light filtered	18 @19
Cylinder, dark filtered	16 @17
Paraffine, 903-907 gravity	12½@13
Paraffine, 903 gravity	11¼@12
Paraffine, 883 gravity	9¼@ 9½
Paraffine, Red	11¼@13

In small lots ¼¢ advance.

Current Hardware Prices.

General Goods.—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

Special Goods.—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

Range of Prices.—A range of prices is indicated by means of the symbol @. Thus 33⅓ @ 33⅓ & 10% signifies that the price of the goods in question ranges from 33⅓ per cent. discount to 33⅓ and 10 per cent. discount.

Names of Manufacturers.—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued May, 1905, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

Standard Lists.—A new edition of "Standard Hardware Lists" has been issued and contains the list prices of many leading goods.

Additions and Corrections.—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

Adjusters, Blind—
Domestic, ℔ doz. $3.00.....33⅓%
North's 10%
Zimmerman's—See Fasteners, Blind.

Window Stop—
Ives' Patent.....35%
Taplin's Perfection.....35%

Ammunition—
See *Caps, Cartridges, Shells, &c.*

Anvils—American—
Eagle Anvils.....℔ lb 7¼@7¾¢
Hay-Budden, Wrought.....9¢@9¼¢
Horseshoe brand, Wrought.....9¢@9¼¢
Trenton .....℔ lb 9@9¼¢

Imported—
Peter Wright & Sons.....℔ lb 10½¢

Anvil, Vise and Drill—
Millers Falls Co., $18.00.....15&10%

Apple Parers—
See *Parers, Apple, &c.*

Aprons, Blacksmiths'—
Livingston Nail Co.....33⅓%

Augers and Bits—
Com. Double Spur.....70&10@75%
Jennings' Patn. reg. finish.50&10%
Boring Mach. Augers.....70&10%
Car Bits, 12-in. twist.....50&10%
Ford's Auger and Car Bits.....40&5%
Forstner Pat. Auger Bits.....25%
C. E. Jennings & Co.:
No. 10 ext. lip. R. Jennings' list..25%
No. 30, R. Jennings' list.....40&7½%
Russell Jennings'.....25&10&2½%
L'Hommedieu Car Bits.....15%
Mayhew's Countersink Bits.....45%
Millers Falls.....50&20&7½%
Ohio Tool Co.'s Bailey Auger and Car Bits.....40&10%
Pugh's Black.....20%
Pugh's Jennings' Pattern.....35%
Snell's Auger Bits.....60%
Snell's Bell Hangers' Bits.....60%
Snell's Car Bits, 12-in. twist....60&10%
Wright's Jennings' Bits.....50%

Bit Stock Drills—
See *Drills, Twist.*

Expansive Bits—
Clark's small, $18; large, $26....50&10%
Clark's Pattern, No. 1, ℔ doz. $26; No. 2, $18.....50&10@60%
Ford's, Clark's Pattern.....50&10@60%
C. E. Jennings & Co., Steer's Pat..25%
Swan's 60%

Gimlet Bits—
Per gro.
Common Dble. Cut....$3.00@3.25
German Pattern, Nos. 1 to 10, $4.60; 11 to 13, $5.75

Hollow Augers—
Bonney Pat., per doz..$9.00@10.00
Ames .....25&10%
New Patent.....25&10%
Universal 20%
Wood's Universal.....25%

Ship Augers and Bits—
Ford's .....33⅓@5%
C. E. Jennings & Co.:
L'Hommedieu's 15%
Watrous' .....35&5%
Ohio Tool Co.'s.....40%
Snell's 40%

Awl Hafts—
See *Hafts, Awl.*

Awls—
Brad Awls:
Handled .....gro. $2.75@3.00
Unhdled, Shldered..gro.63¢@66¢
Unhandled, Patent..gro.66@70¢
Peg Awls:
Unhandled, Patent..gro. 31@34¢
Unhdled, Shldered..gro. 65@70¢
Scratch Awls:
Handled, Com...gro. $3.50@4.00
Handled, Socket..gro.$11.50@12.00
Hurwood 40%

Awl and Tool Sets—
See *Sets, Awl and Tool.*

Axes—
Single Bit, base weights:
First Quality.....$6.75
Second Quality.....$6.25
Double Bit, base weights:
First Quality.....$8.75
Second Quality.....$8.25

Axle Grease—
See *Grease, Axle*

Axles—
Iron or Steel
Concord, Loose Collar...4¼@4¾¢
Concord, Solid Collar...4¾@5¼¢
No. 1 Common, Loose...3¼@3¾¢
No. 1½ Com., New Style3¾@4¼¢
No. 2 Solid Collar.....4@4½¢
Nos. 7, 8, 11 and 12....75@75&5%
Nos. 13 to 14.....70&10@75&5%
Nos. 15 to 18.....75&10@75&10&5%
Nos. 19 to 22.....75&10@75&10&5%

Boxes, Axle—
Common and Concord, not turned lb..4½@5¢
Common and Concord, turned. lb., 5½@6¢
Half Patent.....lb. 8½@9¢

Bait—
Fishing—
Hendryx:
A Bait.....20%
B Bait.....25%
Competitor Bait.....20&5%

Balances—
Sash—
Caldwell new list.....50%
Pullman .....50&10@60%

Spring—
Spring Balances.....60@60&5%
Chatillon's:
Light Spg. Balances.....40&10%
Straight Balances.....40%
Circular Balances.....50%
Large Dial.....30%

Barb Wire—
See *Wire, Barb.*

Bars—
Crow—
Steel Crowbars, 10 to 40 lb.... per lb., 2¾@3¼¢

Towel -
No. 10 Ideal, Nickel Plate..℔ gro. $8.50

Beams, Scale—
Scale Beams.....40&10@50%
Chattillon's No. 1.....30%
Chattillon's No. 2.....40%

Beaters, Carpet—
Holt-Lyon Co.:
No. 12 Wire Coppered ℔ doz. $0.85; Tinned $1.00
No. 11 Wire Coppered ℔ doz. $1.10; Tinned $1.20
No. 10 Wire Galvanized..℔ doz. $1.75
Western W. G. Co.:
No. 1 Electric.....℔ gro. $7.80
No. 2 Buffalo.....℔ gro. $9.00
No. 3 Perfection Dust.....℔ gro. $8.00

Egg—
Holt-Lyon Co.:
Holt, No. A, Japanned....℔ doz. $1.20
Holt, No. 1, Tinned.....℔ doz. $1.50
Holt, No. B, Japanned....℔ doz. $2.00
Holt, No. 2, Tinned.....℔ doz. $2.25
Lyon, No. 2, Japanned....℔ doz. $1.25
Lyon, No. 3, Japanned....℔ doz. $1.50
Taplin Mfg. Co.: ℔ gro.
No. 60 Improved Dover.....$6.00
No. 75 Improved Dover.....$6.50
No. 100 Improved Dover.....$7.00
No. 102 Improved Dover, Tin'd..$8.50
No. 150 Improved Dover, Hotel..$15.00
No. 152 Imp'd Dover, Hotel, T'd.$17.00
No. 200 Imp'd Dover Tumbler...$8.50
No. 202 Imp'd Dover Tumbler, T'd.$9.50
No. 300 Imp'd Dover Mammoth, ℔ doz. $25.00
Western, W. G. Co., Buffalo.....$7.00
Wonder (S. S. & Co.).℔ gro. net, $6.00

Bellows—
Blacksmith, Standard List.. 60&10@70&10%

Blacksmiths'—
Net Prices.

Inch..	*30*	*32*	*34*	*36*	*38*	*40*
Each.	*$3.25*	*3.50*	*4.00*	*4.50*	*5.00*	*5.75*

Extra Length:

Each.	*$3.75*	*4.25*	*4.75*	*5.25*	*6.00*	*7.00*

Hand—

Inch...	*6*	*7*	*8*	*9*	*10*
Doz..	*$4.50*	*5.00*	*5.50*	*6.00*	*6.50*

Molders—

Inch.	*9*	*10*	*11*	*12*	*14*
Doz.	*$8.00*	*9.00*	*10.50*	*12.50*	*14.50*

Bells—
Cow—
Ordinary goods...75&5@75&10&5%
High grade.....70&10@70&10&5%
Jersey .....75&10%
Texas Star.....50%

Door—
Abbe's Gong.....45%
Burton Gong.....50%
Home, R. & E. Mfg. Co.'s.....55&10%
Lever and Pull, Sargent's....60&10&10%
Trip Gong.....50&10@50&10&5%
Yankee Gong.....55%

Hand—
Hand Bells, Polished, Brass.. 60&5@60&10&5%
White Metal.....60%
Nickel Plated....50&10@50&10&5%
Swiss .....60@60&7½%
Cone's Globe Hand Bells.....33⅓@35%
Silver Chime.....33⅓@35%

Miscellaneous—
Farm Bells.....lb. 8½¢
Steel Alloy Church and School 50&10&5@60&5%
American Tube & Stamping Co. Gongs 75%
Table Call Bells.....50@50&10%

Belting—
Leather—
Extra Hvy, Short Lap.60@60&5%
Regular Short Lap...65&10@70%
Standard .....70&5@70&10%
Light Standard.....70&10@75%
Cut Leather Lacing.....60&10%
Leather Lacing Sides, per sq. ft. 17½@18¢

Rubber—
Agricultural (Low Grade).... 75@75&5%
Common Standard....70@70&10%
Standard .....65&70%
Extra .....60&5@60&10%
High Grade.....50&5@50&10%

Bench Stops—
See *Stops, Bench*

Benders and Upsetters, Tire—
Detroit Perfected Tire Bender.....40%
Green River Tire Benders and Upsetters 20%
Detroit Stoddard's Lightning Tire Upsetters, No. 1, $4.25; No. 2, $7.25; No. 3, $10.50; No. 4, $16.25; No. 5, $20.50.

Bicycle Goods—
John S. Leng's Son's 1902 list:
Chain 50%
Parts 50%
Spokes 50%
Tubes 60%

Bits—
Auger, Gimlet, Bit Stock Drills, &c.—See *Augers and Bits.*

Blocks—
Tackle—
Common Wooden....70&10@75&5%
Harts St. Tackle Blocks.....50@50&5%
Hollow Steel Blocks, with Ford's Patent Sheaves.....50&10%
Lane's Patent Automatic Lock and Junior 30%
Stowell's Novelty. Mal. Iron....50&10%
Stowell's Self Loading.....60%
See also Machines, Hoisting.

Boards, Stove—
Zinc, Crystal, &c...30&10@40&10%

Boards, Wash—
See *Washboards.*

Bobs, Plumb—
Keuffel & Esser Co.....33⅓%

Bolts—
Carriage, Machine, &c.—
Common Carriage (cut thread): ⅝ x 6 and Smaller.....75&10%
Larger and longer.....70&7½%
Phila. Eagle $3.00 list May 24, '99 80%
Bolt Ends, list Feb. 14, '95..70&2½%
Machine, ⅝ x 4 and smaller 75&2½%
Machine, larger and longer.. 70&5%

Door and Shutter—
Cast Iron Barrel, Japanned, Round Brass Knob:

Inch.....	*3*	*4*	*5*	*6*	*8*
Per doz.	*$0.30*	*.35*	*.45*	*.56*	*.75*

Cast Iron Spring Foot, Jap'd:

Inch.....	*6*	*8*	*10*
Per doz.....	*$1.15*	*1.40*	*2.00*

Cast Iron Chain, Flat, Japanned:

Inch.....	*6*	*8*	*10*
Per doz.....	*$0.80*	*.90*	*1.20*

Wrt Barrel Japd.....80@80&10%
Wrt " Bronzed....50@50&10%
Wrt. Spring...70&10@70&10&10%
Wrt. Shutter.....50&5@50&10&5%
Wrt. Square Neck.....75@75&10%
Wrt Square.66⅔&10@66⅔&10&10%
Ives' Patent Door.....60%

Plow and Stove—
Plow .....65&10@65&10&10%
Stove .....82½&10@82½&10&5%

Tire—
Common 80%
Norway Iron.....80%
American Screw Company:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84....82½%
Bay State, list Dec. 28, '99.....80%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84....82½%
Eclipse, list Dec. 28, '99.....80%
Mount Carmel Bolt Co.:
Norway Phila., list Oct. 16, '84....80%
Eagle Phila., list Oct. 16, '84....82½%
Mount Carmel, list Dec. 28, '99...80%
Russell, Burdsall & Ward Bolt & Nut Co.:
Empire, list Dec. 28, '99.....80%
Norway Phila., list Oct., '84.....80%
Upson Nut Co.:
Tire Bolts.....72½%

Borers, Tap—
Borers Tap, Ring, with Handle:

Inch.....	*1¼*	*1½*	*1¾*	*2*
Per doz...	*$4.80*	*5.60*	*6.40*	*8.00*
Inch	*2¼*		*2½*	
Per doz.....	*$8.65*		*11.50*	

Enterprise Mfg. Co., No. 1, $1.25; No. 2, $1.65; No. 3, $2.50 each.....25%

Boxes, Mitre—
C. E. Jennings & Co.....30%
Langdon .....15&10%
Perfection .....℔ doz. $30.00
Schatz 40%
Stanley R. & L. Co.:
Nos. 240 to 460.....30%
Nos. 50 and 60.....35%

Braces—
Common Ball, American..$1.25@1.30
Barber's .....50&10&10@60&10%
Fray's Genuine Spofford's.....60%
Fray's No. 70 to 120, 81 to 123, 207 to 414 .....60%
C. E. Jennings & Co.....50&5%
Mayhew's Ratchet.....60%
Mayhew's Quick Action Hay Pat..60%
Millers Falls Drill Braces.....25&10%
P., S. & W. Co., Peck's Pat.60&10@65%
Stanley R. & L. Co.:
Stanley 35%
Victor 45%

Brackets—
Wrought Steel...80&10@80&10&5%
Bradley's Wire Shelf:
Full cases.....80&10&10%
Broken cases.....80&10%
Griffin's Pressed Steel.....80@80&10%
Griffin's Folding Brackets.....70&10%
Stowell's Cast Shelf.....75%
Stowell's Sink.....50%
Western, W. G. Co., Wire.....60&10%

Bright Wire Goods—
See *Wire and Wire Goods.*

Broilers—
Kilbourne Mfg. Co.....75&20%
Western, W. G. Co.....80%
Wire Goods Co.....75@75&10%

Buckets, Galvanized—
Price per dozen.

	Quart.....	*12*	*14*
Water, Regular...	*1.40*	*1.70*	*1.90*
Water, Heavy....	*3.40*	*3.70*	*3.80*
Fire, Rd. Bottom..	*2.30*	*2.55*	*2.95*
Well	*2.55*	*2.87*	*3.15*

Bucks, Saw—
Hoosier.....℔ gro. $36.00

Bull Rings—
See *Rings, Bull*

Butts—
Brass—
Wrought, list Sept., '96.....30%
Cast Brass, Tiebout's.....50%

Cast Iron—
Fast Joint, Broad....40&10@50%
Fast Joint, Narrow...40&10@50%
Loose Joint.....70&10@75%
Loose Pin.....70&10@75%
Mayer's Hinges.....70@70&5%
Parliament Butts.....70@70&5%

Wrought Steel—
Table and Back Flaps...75%
Narrow and Broad.....75%
Inside Blind.....75%
Loose Pin.....75%
Loose Pin, Jap'd.....70&10%
Loose Pin, Ball and Steeple Tip 85%
Japanned Ball Tip Butts... 70&10%
Bronzed, Wrt., Nar. and Inside Blind Butts....55&10%

Ex. 10&10&5@10&10&10%

Cages, Bird—
Hendryx, Brass:
3000, 5000, 1100 series.....5%
1200 series.....33⅓%
200, 300, 600 and 900 series.....60&10%

Hendryx Bronze:
700, 800 series....40&10%
Hendryx Enameled....40&10%

Calipers—See *Compasses.*

Calks, Toe and Heel—

Blunt, 1 prong....per lb.4¢@4¼¢
Sharp, 1 prong...per lb., 4½@4¾¢
Gautier, Blunt....4¢@4¼¢
Gautier, Sharp....4½@4¾¢
Perkins', Blunt Toe....₱ lb 3.65¢
Perkins', Sharp Toe....₱ lb 4.15¢

Can Openers—
See *Openers, Can.*

Cans, Milk—

	5	8	10 gal.
Illinois Pattern	$1.35	1.85	2.05 each.
New York Pattern	1.50	2.20	2.45 each.
Baltimore Pattern	1.50	2.20	2.45 each.
Dubuque	1.35	1.60	1.75 each.

Cans, Oil—

Buffalo Family Oil Cans:

3	5	10 gal.
$18.00	60.00	129.60 gro., net.

Caps, Percussion—

Eley's E. B....$2@$5.5¢
G. D....per M 31@35¢
F. L....per M 40@42¢
G. E....per M 48@50¢
Musket....per M 62@63¢

Primers—

Berdan Primers, $2 per M...20%
B. L. Caps (Sturtevant Shells) $2 per M....20%
All other primers per M.$1.52@1.60

Cartridges—

Blank Cartridges:
32 C. F., $5.50....10&5%
38 C. F., $7.00....10&5%
22 cal. Rim, $1.50....10&5%
32 cal. Rim, $2.75....10&5%
B. B. Caps, Con. Ball, Swgd..$1.90
B. B. Caps, Round Ball....$1.40
Central Fire....25%
Target and Sporting Rifle..15&5%
Primed Shells and Bullets.15&10%
Rim Fire, Sporting....50%
Rim Fire, Military....15&5%

Casters—

Bed....70@70&10%
Plate....60&10@60&10&5%
Philadelphia....75@75&10%
Acme, Ball Bearing....33⅓%
Boss....70&10%
Boss Anti-Friction....70&10%
Gem (Roller Bearing)....80%
Martin's Patent (Phoenix)....45%
Standard Ball Bearing....45%
Tucker's Patent low list....30%
Yale (Double Wheel) low list....50%

Cattle Leaders—
See *Leaders, Cattle.*

Chain, Coil—

American Coil, Straight Link:

3-16	¼	5-16	⅜	7-16	½	9-16
$7.50	5.35	4.40	3.70	3.55	3.45	3.40

⅝ ¾ ⅞ 1 to 1¼ inch.
$3.35 3.30 3.25 3.25 per 100 lb.
German Coil....60&10&10@70%

Halters and Ties—

Halter Chains...60&10@60&10&10%
German Pattern Halter Chains, list July 2½, '97....60&10&10%
Cow Ties....60@60&10%

Trace, Wagon, &c.—

Traces, Western Standard: 100 pr.
6½—6-3, Str'ght, with ring..$23.50
6½—6-2, Str'ght, with ring..$24.50
6½—8-2, Str'ght, with ring..$28.00
6½—10-2, Str'ght, with ring.$32.00
NOTE.—Add 2c per pair for Hooks. Twist Traces 2c per pair higher than Straight Link.
Trace, Wagon and Fancy Chains....60&5@60&10&5%

Miscellaneous—

Jack Chain, list July 10, '93:
Iron....60&10@60&10&5%
Brass....60&10@60&10&10%
Safety Chain....75@75&10&5%
Gal. Pump Chain....lb. 5@5¼%
Covert Mfg. Co.:
Breast....35&5%
Halter....35&5%
Heel....35&5%
Rein....35&5%
Stallion....35&5%
Covert Sad. Works:
Breast....70%
Halter....70%
Hold Back....70%
Rein....70%
Oneida Community:
Am. Coil and Halters....40@40&5%
Am. Cow Ties....45@50%
Eureka Coil and Halter....45@50&5%
Niagara Coil and Halter....45@50&5%
Niagara Cow Ties....45&5@50&10&5%
Niagara Wire Dog Chains..45@50&5%
Wire Goods Co.:
Dog Chain....70&10%
Universal Dbl.-Jointed Chain....50%

Chalk—(From Jobbers.)

Carpenters' Blue....gro. 35@38¢
Carpenters' Red....gro. 30@33¢
Carpenters' White....gro. 25@28¢
See also Crayons.

Checks, Door—

Bardsley's....45%
Columbia....50&10%
Eclipse....60&10%

Chests, Tool—

American Tool Chest Co.:
Boy's Chests, with Tools....55%
Youths' Chests, with Tools....40%
Gentlemen's Chests, with Tools..30%
Farmers', Carpenters', etc., Chests, with Tools....20%
Machinists' and Pipe Fitters' Chests, Empty....50%
Tool Cabinets....50%
C. E. Jennings & Co.'s Machinists' Tool Chests....33⅓&10%

Chisels—
Socket Framing and Firmer

Standard List....75@75&10%
Buck Bros....30%
Charles Buck....30%
C. E. Jennings & Co. Socket Firmer No. 10....60%
C. E. Jennings & Co. Socket Framing No. 15....60%
Ohio Tool Co.'s....70%
Swan's....70%
L. & I. J. White....30@30&5%

Tanged—

Tanged Firmers.33 1-3@33 1-3&10%
Buck Bros....30%
Charles Buck....30%
C. E. Jennings & Co. Nos. 191, 181...25%
L. & I. J. White, Tanged....25&5%

Cold—

lb.
Cold Chisels, good quality..13@15¢
Cold Chisels, fair quality..11@12¢
Cold Chisels, ordinary...9@10¢

Chucks—

Beach Pat., each $8.00....35&5%
Empire....25%
Blacksmiths'....25%
Jacobs' Drill Chucks....35%
Pratt's Positive Drive....25%
Skinner Patent Chucks:
Independent Lathe Chucks....50%
Universal....50%
Combination....50%
Drill Chucks, New Model....30%
Drill Chucks, Standard....45%
Drill Chuck, Skinner Pat., 0, 1, 2..35%
Drill Chucks, Skinner Pat., 3, 4, 5, 6, 7, 8....35%
Drill Chucks, Positive Drive....30%
Planer Chucks....25%
Face Plate Jaws....40%
Standard Tool Co.:
Improved Drill Chuck....45%
Union Mfg. Co.:
Combination....50%
Czar Drill....35%
Combination Geared Scroll....40%
Geared Scroll....40%
Independent....50%
Independent Steel....40%
Union Drill....45%
Universal....50%
Independent Iron F. Plate Jaws.40%
Independent Steel F. Plate Jaws.40%
Westcott Patent Chucks:
Lathe Chucks....50%
Little Giant Auxiliary Drill....50%
Little Giant Double Grip Drill..50%
Little Giant Drill, Improved....50%
Oneida Drill....50%
Scroll Combination Lathe....50%

Clamps—

Adjustable, Hammers'....20@20&5%
Cabinet, Sargent's....50&10%
Carriage Makers', P. S. & W. Co..50%
Carriage Makers', Sargent's....60%
Besly, Parallel....33⅓&10%
Lineman's, Utica Drop Forge & Tool Co....40%
Saw Clamps, see Vises, Saw Filers'.

Cleaners, Drain—

Iwan's Champion, Adjustable....55%
Iwan's Champion, Stationary....45%

Sidewalk—

Star Socket, All Steel..₱ doz. $4.05 net
Star Shank, All Steel..₱ doz. $3.24 net
W. & C. Shank, All Steel, ₱ doz., 7½ in., $3.00; 8 in., $3.25.

Cleavers, Butchers'—

Foster Bros....30%
New Haven Edge Tool Co.'s....45%
Fayette R. Plumb....33⅓@33⅓&10%
L. & I. J. White....30%

Clippers—

Chicago Flexible Shaft Company:
'98 Chicago Horse....$8.75 } 15%
1902 Chicago Horse....10.75 }
20th Century Horse, each, $5.00...20%
Lightning Belt....$15.00 } 15%
Chicago Belt....$20.00 }
Stewart's Patent Sheep, $12.75....20%

Finger Nail Clippers—

Smith & Hemenway Co.₱ doz. net $2.00

Clips, Axle—

Eagle, 5-16 and ⅜ in..75@75&10%
Norway, 5-16 and ⅜ in..60&10@70%

Cloth and Netting, Wire
—See *Wire, &c.*

Cocks, Brass—

Hardware list:
Compression, Plain Bibbs, Globe, Kerosene, Racking, &c., Yocks....70&10@75%

Coffee Mills—
See *Mills, Coffee.*

Collars, Dog—

Nickel Chain, Walter B. Stevens & Son's list....40%
Leather, Walter B. Stevens & Son's list....40%

Combs, Curry—

Metal Stamping Co....40%

Mane and Tail—

Covert's Saddlery Works....60&10%

Compasses, Dividers, &c.

Ordinary Goods....75&5@75&10%
Bemis & Call Hdw. & Tool Co.:
Dividers....65%
Calipers, Double....65%
Calipers, Inside or Outside....65%
Calipers, Wing....60%
Compasses....50%

Conductor Pipe,—

L. C. L. to Dealers: Galvanized.

Territory.	*Nested.*	*Not nested.*
Eastern	*70&15%*	*70&10%*
Central	*70&7½%*	*70&2½%*
Southern	*70&2½%*	*60&20%*
So. Western	*60&20%*	*60&10%*

Copper.

Eastern	*50&5%*
Central	*50&2½%*
Southern	*50%*
So. Western	*40&10&5%*

Terms, 60 days; 2% cash 10 days. Factory shipments generally delivered.
See also Eave Troughs.

Coolers, Water—

Gal. each..	2	3	4	6	8
Labrador	$1.20	$1.50	$1.80	$2.10	$2.70
Gal.	3	4	6	8	
Iceland, ea.	$1.80	$2.10	$2.40	$3.00	
Gal.	2	3	4	6	8
Galv. Lined, ea.	$1.85	$2.00	$2.25	$2.90	$3.90

25%

Gavl. Lined, side handles,

Gal.	2	3	4	6	8
Each.	$1.95	$2.15	$2.40	$3.30	$4.15..25%

Coopers' Tools—
See *Tools, Coopers'.*

Cord— Sash—

Braided, Drab....lb. 35¢
Braided White, Com. lb..21@22½%
Cable Laid Italian.... lb., A, 18¢; B, 16¢
Common India....lb. 10@10½¢
Cotton Sash Cord, Tw'ted..11@17¢
Patent Russia....lb..@14¢
Cable Laid Russia....lb..@15¢
India Hemp, Braided..lb..@18¢
India Hemp, Twisted..lb. 12@13¢
Patent India, Twisted. lb. 12@13¢
Anniston Cordage Co.: Braided Cotton, Old Glory, Nos. 7 to 12....₱ lb 28 ¢
Anniston, Nos. 7 to 12....₱ lb 22 ¢
Old Colony, Nos. 7 to 12..₱ lb 22 ¢
Anniston Drab, Nos. 7 to 12.₱ lb 26 ¢
Pearl Braided, cotton, No. 6, ₱ lb, 22½¢; No. 7, 21½¢; Nos. 8 to 12, 21¢
Eddystone Braided, Nos. 7, 8, 9 and 10....₱ lb 24 ¢
Eddystone Braided Cotton, No. 6..₱ lb 25 ¢
Harmony Cable Laid Italian, Nos. 7 to 10....₱ lb 23 ¢
Peerless:
Cable Laid Italian....16 ¢
Cable Laid Russian....14 ¢
Cable Laid India....12 ¢
Braided India....18 ¢
Samson, Nos. 8 to 12:
Braided, Drab Cotton....₱ lb 40 ¢
Braided, Italian Hamp....₱ lb 40 ¢
Braided, Linen....₱ lb 55 ¢
Braided, White Cotton or Spot....₱ lb 35 ¢
Massachusetts, White....₱ lb 28 ¢
Massachusetts, Drab....₱ lb 32 ¢
Phoenix, White, Nos. 8 to 12, 24¢; No. 7, 21½¢; No. 6, 25½¢.
Silver Lake:
A quality, Drab....40 ¢
A quality, White....38 ¢
B quality, Drab....35 ¢
B quality, White....30 ¢
Italian Hemp....40 ¢
Linen....57½ ¢

Wire, Picture—

List Oct., '00....85&10&10@85&10&10&5%
Hendryx Standard Wire Picture Cord, 85&10&5%

Cradles—

Grain....40&12½%

Crayons—

White Round Crayons, gr. 5½@6¢
Cases, 100 gro., $4.00, at factory.
D. M. Steward Mfg. Co.: (Case lots, 20%)
Jumbo Crayons....gr. $3.50
Metal Workers' Crayons, gr. $2.50
Soapstone Pencils, round, flat or square....gr. $1.50
Rolling Mill Crayons....gr. $2.50
Railroad Crayons (composition) gr. $2.00
Zelnicker's Lumber:
Red, Blue, Green....₱ gro. $6.50
Black....₱ gro. $4.00
See also Chalk.

Crooks, Shepherds'—

Fort Madison, Heavy....₱ doz. $7.00
Fort Madison, Light....₱ doz. $6.50

Crow Bars—See *Bars, Crow.*

Cultivators—

Victor Garden....50%

Cutlery, Table—

International Silver Company:
No. 12 M'd'm Knives, 1847..₱ doz. $3.50
Star, Eagle, Rogers & Hamilton and Anchor....₱ doz. $3.00
Wm. Rogers & Son....₱ doz. $2.50

Cutters— Glass—

H. H. Mayhew Co....40%
Red Devil....50%
Smith & Hemenway Co....50%
Woodward....40%

Meat and Food—

American....30%

Nos.	1	2	3	4	B	5
Each	$5	$7	$10	$25	$50	$60

Enterprise....25@25&7½%

Nos.	5	10	12	22	32
Each	$2	$3	$2.75	$4.50	$6

Dixon's....₱ doz. 30&10@40%

Nos.	1	2	3	4
	$14.00	$17.00	$19.00	$30.00

Ideal....40&10@60%
Little Giant....₱ doz. 33⅓@40%

Nos.	305	310	312	320	322
	$35.00	$48.00	$44.00	$72.00	$62.00

N. E. Food Choppers....40%
New Triumph No. 605, ₱ doz. $24.00....30&10@40%
Russwin Food, No. 1, $24.00; No. 2, $27.00....45&10&10%
Woodruff's....₱ doz. 30&10@40%

Nos.	100	150
	$15.00	$18.00

Enterprise Beef Shavers....25@30%

Slaw and Kraut—

Henry Disston & Sons:
Slaw, Corn Grater, &c....40%
Kraut Cutters, 24 x 7, 26 x 8, 30 x 9....35%
Kraut Cutters, 36 x 12, 40 x 12....40%
J. M. Mast Mfg. Co.:
Slaw Cutters, 1 Knife....₱ doz. $3.00
Combined Slaw Cutter and Corn Grater....₱ doz. $4.00
Tucker & Dorsey Mfg. Co.:
Kraut Cutters....40%
Slaw Cutters, 1 Knife..₱ gr. $18@$20
Slaw Cutters, 2 Knife..₱ gr. $22@$36

Tobacco—

All Iron, Cheap..doz. $4.25@$4.50
Enterprise....25@30%
National, ₱ doz., No. 1, $21; No. 2, $18....40%
Sargent's, ₱ doz., No. 2....60%
Sargent's, Nos. 12 and 21....60&10%

Washer—

Appleton's, ₱ doz., $16.00....50&10&10%

Diggers, Post Hole, &c.—

Dalbey Post Hole Auger..per doz., $9.00
Iwan's Imp'ved Post Hole Auger.40&5%
Iwan's Vaughan Pattern Post Hole Augers....₱ doz. $6.25
Iwan's Perfection Post Hole Digger..₱ doz. $8.25
Iwan's Split Handle Post Hole Diggers....₱ doz. $7.25
Kohler's Universal....₱ doz. $15.00
Kohler's Little Giant....₱ doz. $12.00
Kohler's Hercules....₱ doz. $10.00
Kohler's Invincible....₱ doz. $9.00
Kohler's Rival....₱ doz. $8.00
Kohler's Pioneer....₱ doz. $7.20
Never-Break Post Hole Diggers, ₱ doz., $24.00....60%
Samson, ₱ doz. $34.00....25%

Dividers—See *Compasses.*

Doors, Screen—

Phillips', style E, ⅞ in....₱ doz. $10.00
Phillips', style 077, ⅞ in....₱ doz. $7.50
Phillips', style x-y, ⅞ in....₱ doz. $10.50

Drawers, Money—

Tucker's Pat. Alarm Till No. 1, ₱ doz., $18; No. 2, $15; No. 3, $12; No. 4, $18.

Drawing Knives—
See *Knives, Drawing.*

Dressers, Emery Wheel—

Diamond Emery Wheel Dressers....35%
Diamond Wheel Dresser Cutters....35%

Drills and Drill Stocks—

Common Blacksmiths' Drill, each....$1.50@$1.75
Breast, Millers Falls....15&10%
Breast, P., S. & W....40&5%
Goodell Automatic Drills..40&5@40&10%
Johnson's Automatic Drills, Nos. 2 and 3....16⅔%
Johnson's Drill Points....16⅔%
Millers Falls Automatic Drills.33⅓&10%
Ratchet, Curtis & Curtis....25%
Ratchet, Parker's....40%
Ratchet, Weston's....33⅓%
Ratchet, Whitney's, P., S. & W..50%
Whitney's Hand Drill, No. 1, $10.00; Adjustable, No. 10, $12.00....33⅓%

Twist Drills—

Bit Stock....60&10&10@70%
Taper and Straight Shank....60&10@60&10&5%

Drivers, Screw—

Screw D'ver Bits, per doz..45@60¢
Balsey's Screw Holder and Driver, ₱ doz., 2½-in., $6; 4-in., $7.50; 6-in., $9....40%
Buck Bros.' Screw Driver Bits....30%
Champion....50%
Edson....60%
Fray's Hol. H'dle Sets, No. 3, $12..50%
Gay's Double Action Ratchet....35%
Goodell's Auto..50&10&10@50&10&10&5%
Hurwood....40%
Mayhew's Black Handle....40%
Mayhew's Monarch....40&10%
Millers Falls, Nos. 20 and 21....25&10%
Millers Falls, Nos. 11, 12, 41, 42..15&10%
Never Turn....60%
New England Specialty Co....50%
Sargent & Co.'s:
Nos. 1 and 60....50&10&10%
Nos. 50 and 55....60&10%
Nos. 20 and 40....70&10%
Smith & Hemenway Co....40&5%
H. D. Smith & Co.'s Perfect H'dle.40%
Stanley R. & L. Co.'s:
No. 64, Varn. Handles....65%
No. 86....75%
Victor....55%
Defiance....70%
Swan's:
Nos. 65 to 68....50%
No. 40....40&10%
Nos. 25, 35 and 45....20&10&10%

Eave Trough, Galvanized—

Territory.	*L. C. L.*
Eastern	*80&5%*
Central	*75&10&10%*
Southern	*75&12½%*
So. Western	*75&5%*

Terms,—2% for cash. Factory shipments generally delivered
See also Conductor Pipe and Elbows.

Elbows and Shoes—

Factory shipments, all territories:
Galv. Steel and Galv. C. C. Iron and Steel, Standard Gauge....60&10%
No. 26....35%
No. 24....25%
No. 22....10%
Copper....37½%
Perfect Elbows (S., S. & Co.)....40%

Emery, Turkish—

½ to ½6 5½ to 180 Flour

Kegs	*lb. 5* ¢	*5½* ¢	*3½* ¢
½ Kegs	*lb. 5¼* ¢	*5¾* ¢	*3¾* ¢
¼ Kegs	*lb. 5½* ¢	*6* ¢	*4* ¢
10-lb. cans,			
10 in case	*6½* ¢	*7* ¢	*6* ¢
10-lb. cans, less than 10	*10* ¢	*10* ¢	*8* ¢
Less quantity	*10* ¢	*10* ¢	*8* ¢

NOTE.—In lots 1 to 3 tons a discount of 10% is given.

Extractors, Lemon Juice
—See *Squeezers, Lemon.*

Fasteners, Blind—

Zimmerman's....50&10%
Walling's....45%

Cord and Weight—

Ives....40%

Faucets—

Cork Lined.....50@50&10%
Metallic Key, Leather Lined..
60&10@70%
Red Cedar.....40&10@50%
Petroleum.....70&10@75%
B. & L. B. Co.:
Metal Key.....60&10%
Star.....60%
West Lock.....50&10%
John Sommer's Peerless Tin Key....40%
John Sommer's Boss Tin Key.....50%
John Sommer's Victor Mtl. Key.50&10%
John Sommer's Duplex Metal Key..60%
John Sommer's Diamond Lock.....40%
John Sommer's I.X.L. Cork Lined...50%
John Sommer's Reliable Cork Lined..
50&10%
John Sommer's Chicago Cork Lined.60%
John Sommer's O. K. Cork Lined....50%
John Sommer's No Brand, Cedar....50%
John Sommer's Perfection, Cedar....40%
McKenna, Brass:
Burglar Proof, N. P.....25%
Improved, ¾ and ⅞ inch.....25%
Self Measuring:
Enterprise, ℔ doz. $36.00.....40&10%
Lane's, ℔ doz. $36.00.....40&10%
National Measuring, ℔ doz. $36.40&10%

Felloe Plates—

See *Plates, Felloe.*

Files— Domestic—

List revised Nov. 1, 1899.
Best Brands.....70&10@75&5%
Standard Brands.75&10@75&10&10%
Lower Grade....75&10&10@80&10%

Imported—

Stubs' Tapers, Stubs' list, July 24, '97.....33 1-3@40%

Fixtures, Fire Door—

Richards Mfg. Co.:
Universal, No. 103.....$4.00
Special, No. 104.....$4.00
Fusible Links.....$0.25
Expansion Bolts.....50&10%

Grindstone—

Net Prices:

Inch	15	17	19	21	24
Per doz.	$2.15	2.85	3.25	3.75	4.50

P., S. & W. Co.....30&10@40%
Reading Hardware Co.....60%
Sargent's.....70%
Stowell's Giant Grindstone Hanger..
℔ doz. $6.00
Stowell's Grindstone Fixtures, Extra Heavy.....50&10&10%
Stowell's Grindstone Fixtures, Light.
60&10%

Fodder Squeezers—

See *Compressors.*

Forks—

NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.
Iowa Dig-Ezy Potato.....60&10%
Victor, Hay.....60&15&2½%
Victor, Manure.....66⅔%
Victor, Header.....65%
Champion, Hay.....66⅔%
Champion, Header.....65%
Champion, Manure.....60&15&2½%
Columbia, Hay.....60&20%
Columbia, Manure.....70%
Columbia, Spading.....70&12½%
Hawkeye Wood Barley.....40%
W. & C. Potato Digger.....60&10%
Acme Hay.....60&20%
Acme Manure, 4 tine.....60&10&5%
Dakota Header.....63&20%
Jackson Steel Barley.....60&20%
Kansas Header.....65%
W. & C. Favorite Wood Barley.....40%
Plated.—See Spoons.

Frames— Saw—

White, S'g't Bar, per doz.75@80¢
Red, S'g't Bar, per doz..$1.00@1.25
Red, Dbl. Brace, per doz.$1.40@1.50

Freezers, Ice Cream—

Qt.	1	2	3	4	6
Each	$1.30	$1.60	$1.90	$2.20	$2.80

Fruit and Jelly Presses—

See *Presses, Fruit and Jelly.*

Fry Pans—See *Pans, Fry.*

Fuse— *Per 1000 Feet.*

Hemp.....$2.75
Cotton.....3.20
Waterproof Sgl. Taped..3.65
Waterproof Dbl. Taped..4.40
Waterproof Tpl. Taped..5.15
} 10&2½%

Gates, Molasses and Oil—

Stebbins' Pattern.80&10@80&10&5%

Gauges—

Marking, Mortise, &c.....
50&10&5@50&10&10&5%
Chapin-Stephens Co.:
Marking, Mortise, &c.50&10@50&10&10%
Scholl's Patent.....50&10@50&10&10%
Door Hangers.....50@50&10%
Stanley R. & L. Co.'s Butt and Rabbet Gauge.....35%
Marking and Mortise.....60%
Wire, Brown & Sharpe's.....25%
Wire, Morse's.....25%
Wire, P., S. & W. Co.....30&10%

Gimlets— Single Cut—

Numbered assortments, per gro.
Nail, Metal, No. 1, $2.00; 2, $2.30
Spike, Metal, No. 1, $4.00; 2, $4.30
Nail, Wood Handled, No. 1, $2.30; 2, $2.60
Spike, Wood Handled, No. 1, $4.30; 2, $4.60

Glass, American Window

See *Trade Report.*

Glasses, Level—

Chapin-Stephens Co.....60@60&10&10%

Glue, Liquid Fish—

Bottles or Cans, with Brush..
25@50%
Cans (½ pts., pts., qts., ½ gal., gal.).....25@48%
International Glue Co. (Martin's)...
40&10%

Grease, Axle—

Common Grade....*gro. $4.50@5.50*
Dixon's Everlasting..10-lb pails, ea. 85¢
Dixon's Everlasting, in boxes, ℔ doz. 1 lb, $1.20; 2 lb, $2.00

Grips, Nipple—

Perfect Nipple Grips.....40&10&2%

Griddles, Soapstone—

Pike Mfg. Co.....33⅓@33⅓&10%

Grindstones—

Bicycle Emery Grinder.....$6.50
Bicycle Grindstones, each.....$2.50@3.00
Pike Mfg. Co.:
Improved Family Grindstones, per inch, ℔ doz.....$2.00
Pike Mower and Tool Grinder, each.....$6.00
} 33⅓%
Velox Ball Bearing, Mounted, Angle Iron Frames, each.....$3.25

Halters and Ties—

Covert Mfg. Co.:
Web.....35&5%
Jute Rope.....50%
Sisal Rope.....30&10%
Cotton Rope.....45%
Hemp Rope.....45%
Covert's Saddlery Works:
Web and Leather Halters.....70%
Jute and Manila Rope Halters....70%
Sisal Rope Halters.....60&20%
Jute, Manila and Cotton Rope Ties.....70%
Sisal Rope Ties.....60&10%
E. T. Rugg & Co.:
Leather Halters.....50%
Web Halters and Webbing.....60%
Jute and Sisal Rope Halters.....60%
Jute and Sisal Horse and Cattle Ties.....60%
Cotton Horse Ties.....60%
Livery Ties, Braided.....60%

Hammers—

Handled Hammers—

Heller's Machinists'...40&10@40&10&10%
Heller's Farriers.....40&10@40&10&10%
Magnetic Tack, Nos. 1, 2, 3, $1.25, $1.50, $1.75.....50%
Peck, Stow & Wilcox.....40&10&5%
Fayette R. Plumb:
Plumb, A. E. Nail.....
33⅓&7½@33⅓&10&7½%
Engineers' and B. S. Hand.....
50&7½&5@50&10&7½&5%
Machinists' Hammers.50&5@50&10&5%
Riveting and Tinners'.....
40&2½@40&10&2½%
Sargent's C. S. New List.....40%

Heavy Hammers and Sledges—

Under 3 lb., per lb. 50¢.....
80&10&10@85%
3 to 5 lb., per lb. 40¢.....
80&10&10@85%
Over 5 lb., per lb 30¢..85@85&10%
Wilkinson's Smiths'...lb. 9½@10¢

Handles—

Agricultural Tool Handles

Axe, Pick, &c.....60&5@60&10&5%
Hoe, Rake, &c.....45@50&5%
Fork, Shovel, Spade, &c.:
Long Handles.....45@50&5%
D Handles.....40%

Cross-Cut Saw Handles—

Atkins'.....40&5%
Champion.....45@45&10%
Disston's.....50%

Mechanics' Tool Handles—

Auger, assorted...*gro. $2.50@2.85*
Brad Awl.....*gro. $1.65@1.85*
Chisel Handles:
Apple Tanged Firmer, gro. assorted.....*$2.40@2.65*
Hickory Tanged Firmer, gro. assorted.....*$2.15@2.40*
Apple Socket Firmer, gro. assorted.....*$1.75@1.95*
Hickory Socket Firmer, gro. assorted.....*$1.45@1.60*
Hickory Socket Framing, gro. assorted.....*$1.60@1.75*
File, assorted.....gro. *$1.20@1.40*
Hammer, Hatchet, Axe, &c.
60&10@60&10&10%
Hand Saw, Varnished, doz.
80&85¢; Not Varnished...*65@75¢*
Plane Handles:
Jack, doz. 30¢; Jack, Bolted.75¢
Fore, doz. 45¢; Fore, Bolted.90¢
Chapin-Stephens Co.:
Carving Tool.....40@40&10%
Chisel.....65@65&10%
File and Awl.....65@65&10%
Saw and Plane.....40@40&10%
Screw Driver.....40@40&10%
Millers Falls Adj. and Ratchet Auger Handles.....15&10%
Nicholson Simplicity File Handle....
℔ gro. $0.85@$1.50

Hangers—

NOTE—Barn Door Hangers are generally quoted per pair, without track, and Parlor Door Hangers per double set with track, &c

Barn Door, New Pattern, Round Groove, Regular:

Inch	3	4	5	6	8
Single Doz.	$0.90	1.25	1.60	1.95	2.50

Barn Door, New England Pattern, Check Back, Regular:

Inch	3	4	5	6
Single Doz.	$1.30	1.85	2.50	3.00

Allith Mfg. Co.:
Reliable, No. 1.....per doz. $8.00
Reliable, No. 2.....per doz. $9.60
Chicago Spring Butt Co.:
Friction.....25%
Oscillating.....25%
Big Twin.....25%
Chisholm & Moore Mfg. Co.:
Baggage Car Door.....50%
Elevator.....30%
Railroad.....50%
Cronk & Carrier Mfg. Co.:
Loose Axle.....60&10&5%
Roller Bearing.....70&5%
Griffin Mfg. Co.:
Solid Axle, No. 10, $12.00.....70%
Roller Bearing, No. 11, $15.00.70%
Roller Bearing, Ex. Hy., No. 22, $18.00.....70%
Hinged Hangers, $16.00....60&10%
Lane Bros. Co.:
Parlor, Ball Bearing.....$4.00
Parlor, Standard.....$3.15
Parlor, No. 105.....$2.85
Parlor, New Model.....$2.80
Parlor, New Champion.....$2.25
Barn Door, Standard.60&10&2½%
Hinged.....net $6.40
Covered.....60&10%
Special.....70&5%
Lawrence Bros.:
Advance.....60&10%
Cleveland.....70&5%
Clipper, No. 75.....60%
Crown.....60&10%
Easy Parlor Door, Dbl. Sets, $2.50; Single Sets, $1.25.
Giant.....60&5%
Hummer.....70&5%
New York.....60&10%
Peerless.....70&5%
Sterling.....60&10%
McKinney Mfg. Co.:
No. 1, Special, $15.....60&10%
No. 2, Standard, $18.....60&10%
Hinged Hangers, $16.....50%
Meyers' Stayon Hangers.....60%
Richards Mfg. Co.:
Pioneer Wood Track No. 3..$2.15
Ball B'r'g St'l Track No. 10.$2.40
Roller B'r'g St'l Track No. 12.$2.30
Ball B'r'g St'l Track No. 13.$2.40
Roller B'r'g St'l Track No. 14.$2.30
Hero, Adj. Track No. 19.....50%
Adjustable Track Tandem Trolley Track No. 16.....50%
Seal, Steel Track No. 8.....$2.40
Auto Adj. Track No. 22..40&10%
Trolley B. D. No. 17.....$1.40
Trolley F. D. No. 120.....$2.35
Trolley F. D. No. 121.....$2.45
Trolley F. D. No. 150.....$2.60
Safety Underwriters F. D. No. 101.....$2.25
Tandem No. 44.....70&5%
Trolley F. D. No. 151.....$3.00
Palace, Adjustable Track No. 132.....40&10%
Royal, Adjustable Track No. 122.....40&10%
Ives' Wood Track No. 1.....$2.15
Trolley B. D. No. 20.....$1.35
Trolley B. D. No. 24.....$1.45
Trolley B. D. No. 27.....$1.50
Trolley B. D. No. 28.....$1.66
Roller Bearings Nos. 39, 40, 41, 43, 44.....70&5%
Anti-friction No. 42.....60&10%
Hinged Tandem No. 46.....60%
Folding Door B. B. Swivel No. 135.....30%
Safety Door Hanger Co.:
Storm King Safety.....60%
U. S. Standard Hinge.....60%
Stowell Mfg. & Foundry Co.:
Acme Parlor Ball Bearing....40%
Ajax Hinge Door.....60%
Apex Parlor Door.....50&10&5%
Atlas.....60%
Baggage Car Door.....50%
Climax Anti-Friction.....50&10%
Elevator.....40%
Express.....50%
Freight Car Door.....60%
Interstate.....60&10%
Lundy Parlor Door.....50&10%
Magic.....60%
Matchless.....60&10%
Nansen.....70&5%
Parlor Door.....50&10%
Railroad.....50&10%
Rex Hinge Door.....60%
Street Car Door.....50%
Steel, Nos. 300, 404, 500....50&10%
Underwriters' Fire Door.....40%
Wild West Warehouse Door..50%
Zenith for Wood Track....50&10%
A. L. Sweet Iron Works:
Check Back.....70%
Climax Anti-Friction.....50&10%
Eagle.....70%
Hylo Hinge.....60%
New Perfection.....60%
Pilot.....60%
Pilot Hinge.....60%
Rider Wooster.....60%
Western Pattern.....70%
Taylor & Boggis F'y Co.'s Kidder's Roller Bearing.50&15&10&5%
Wilcox Mfg. Co.:
Bike Roller Bearing.....60&10%
C. J. Roller Bearing.....60&10%
Cycle Ball Bearing.....50%
Dwarf Ball Bearing.....40%
Ives, Wood Track.....60&10%
L. T. Roller Bearing...60&10&5%
New Era Roller Bearing..50&10%
O. K. Roller Bearing..60&10&5%
Prindle, Wood Track.....60%
Richards' Wood Track.....60%
Richards' Steel Track.....50&10%
Spencer Roller Bearing....60&10%
Tandem, Nos. 1 and 2.....60%
Underwriters' Roller Bearing..40%
Velvet.....50%
Wilcox Auditorium Ball B'r'g.20%
Wilcox Barn Trolley No. 123..40%
Wilcox Elv. Door, Nos. 112 and 122½.....50%
Wilcox Elv. Door, No. 132....40%
Wilcox Fire Trolley, Roller Bearing.....30%
Wilcox Le Roy Noiseless Ball Bearing.....40%
Wilcox New Century..50&10&10%
Wilcox O. K. Steel Track....50%
Wilcox O. K. Trolley.....50%
Wilcox Trolley Ball Bearing..40%
Wilcox Wideman Narrow Gauge Ball Bearing.....40%

For Track, see Rail.

Extra, 10% often given.

Hangers— Garment—

Pullman Trouser, ℔ gro., No. 1, $9.00; No. 4, $24.00; No. 7, $7.50.
Victor Folding.....℔ gro. $9.60
Western, W. G. Co.....70&10%

Gate—

Myers' Patent Gate Hangers, ℔ doz. net.....$4.50

Hasps—

Griffin's Security Hasp.....50%
McKinney's Perfect Hasp, ℔ doz..50%

Hatchets—

Regular list, first quality.40&7½%
Second quality $1.00 per doz. less than first quality.

Heaters, Carriage—

Clark, No. 5, $1.75; No. 5B, $2.00; No. 3, $2.25; No. 3D, $2.75; No. 7D, $3.00; No. 3E, $3.25; No. 1, $3.50.....15%
Clark Coal, ℔ doz. $0.75.....10%

Hinges—

Blind and Shutter Hinges—

Surface Gravity Locking Blind: (Victor; National; 1868 O. P.; Niagara; Clark's O. P.; Clark's Tip; Buffalo.)

No.	1	3	5
Doz. pair	$0.75	1.35	2.70

Mortise Shutter: (L. & P., O. S., Dixie, &c.)

No.	1	1½	2	2½
Doz. pair	$0.70	.65	.60	.55

Mortise Reversible Shutter (Buffalo, &c.):

No.	1	1½	2
Doz. pair	$0.70	.65	.60

North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50.....10%
Parker.....70&75%
Reading's Gravity.....60%
Sargent's, Nos. 1, 3, 5, 11 and 13..75%
Stanley's Steel Gravity Blind Hinges, ℔ doz. sets, without screws, $0.90; with screws, $1.20.
Wrightsville Hardware Co.:
O. S., Lull & Porter.....75&10&5%
Acme, Lull & Porter.....75&10%
Queen City Reversible.....75&10%
Shepard's Noiseless, Nos. 60, 65, 55.....75&10%
Niagara, Gravity Locking, Nos. 1, 3 & 5.....75&10&5%
1868, Old Pat'n, Nos. 1, 3 & 5....
75&10&5%
Tip Pat'n, Nos. 1, 3 & 5...75&10&5%
Buffalo Gravity Locking, Nos. 1, 3 & 5.....75&10&5%
Shepard's Double Locking, Nos. 20 & 25.....70%
Champion Gravity Locking, No. 75.75%
Steamboat Gravity Locking, No. 10.75%
Pioneer, Nos. 060, 45 & 5½.....75%
Empire, Nos. 101 & 103.....70%
W. H. Co.'s Mortise Gravity Locking, No. 2.....60%

Gate Hinges—

Clark's or Shepard's—Doz. sets:

No.	1	2	3
Hinges with L'Ves.	$2.00	2.70	5.00
Hinges only.....	1.40	2.05	3.80
Latches only.....	.70	.70	.35

New England:
With Latch.....*doz.*...*@$2.00*
Without Latch...*doz.*...*@$1.60*
Reversible Self-Closing:
With Latch.....*doz.*...*@$1.75*
Without Latch...*doz.*...*@$1.35*
Western:
With Latch.....*doz. $1.75*
Without Latch.....*doz. $1.15*
Wrightsville Hardware Co.:
Shepard's or Clark's, doz. sets,

	Nos. 1	2	3
Hinges with Latches..	$2.00	2.70	5.00
Hinges only.....	1.40	2.05	3.80
Latches only.....	.70	.70	1.35

Pivot Hinges—

Bommer Bros. Pivot.....40%
Lawson Mfg. Co. Matchless.....45%

Spring Hinges—

Holdback Cast Iron.....
gro. $9.00@$9.50
Non-Holdback, Cast Iron.....
gro. $8.00@$8.50
J. Bardsley:
Bardsley's Non-Checking Mortise Floor Hinges.....45%
Bardsley's Patent Checking..15%
Bommer Bros.:
Bommer Ball Bearing Floor Hinges.....40%
Bommer Spring Hinges.....40%
Chicago Spring Butt Co.:
Chicago Spring Hinges.....25%
Triple End Spring Hinges....50%
Chicago (Ball Bearing) Floor Hinge.....50%
Garden City Engine House....25%
Keene's Saloon Door.....25%
Columbian Hardware Co.:
Acme, Wrought Steel.....30%
Acme, Brass.....25%
American.....30%
Columbia, No. 14.....℔ gr. $9.00
Columbia, No. 15.....℔ gr. $25.00
Columbia, Adjustable, No. 7, ℔ gr. $12.00
Gem, new list.....30%
Clover Leaf.....℔ gr. $12.50
Oxford, new list.....30%
Lawson Mfg. Co., Matchless....30%
Richards Mfg. Co.:
Superior Double Acting Floor Hinges.....40%
Shelby Spring Hinge Co.:
Buckeye All Steel Holdback Screen Door.....$9.00
Chief Ball B'r'g Floor Hinge.50%
Ohio Detachable Screen Door Hinge.....℔ gr. $12.00
The Stover Mfg. Co.:
Ideal, No. 16, Detachable, ℔ gr. $12.50
Ideal, No. 4.....℔ gr. $9.00
New Idea No. 1.....℔ gr. $5.00
New Idea, Double Acting....45%
New Idea Floor.....45%
Van Wagoner:
Ball Bearing.....25%
No. 777 Sh't Steel Holdb'k, ℔ gro. pr.$9

Extra 10% often given on most of these Hinges.

Wrought Iron Hinges—

Strap and T Hinges, &c., list December 20, 1904:

Light Strap Hinges...70%
H'vy Strap H'g's...75&5%
Light T Hinges.....65%
Heavy T Hinges.....60%
Extra H'y T H'g's.70&10%
Hinge Hasps.....50%
Cor. Heavy Strap..75&5%
Cor. Ex. Heavy T.70&10%
Extra 10@10&5%

Screw Hook and Strap.
6 to 12 in..lb. 3½¢
1½ to 20 in..lb. 3¼¢
22 to 36 in..lb. 3 ¢

Screw Hook and Eye:
¾ to 1 inch.....lb. 6 ¢
⅝-inch.....lb. 7 ¢
½-inch.....lb. 9 ¢

Hitchers, Stall—

Covert Mfg. Co., Stall Hitchers....35%

Hods— Coal—

	Per doz.			
Inch	15	16	17	18
Galv. Open	$2.50	2.75	3.00	3.25
Jap. Open	$1.90	2.10	2.25	2.55
Galv. Funnel	$3.00	3.30	3.60	3.90
Jap. Funnel	$2.45	2.65	2.85	3.30

Masons, Etc.—

Cleveland Wire Spring Co.:
Steel Mortar.....each $1.45
Steel Brick.....each $1.10

Hoes— Eye—

Scovil and Oval Pattern.....
60&10@60&10&10%
Grub, list Feb. 23, 1899.....
70&10@75&10%
D. & H. Scovil.....35%

Handled—

NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.

Ft. Madison Cotton Hoe....70&10&10%
Ft. Madison Crescent Cultivator Hoe, ℔ doz.....70&10%
Ft. Madison Mattock Hoes:
Regular Weight.....℔ doz. 66⅔%
Junior Size.....℔ doz. $4.00
Ft. Madison Sprouting Hoe..℔ doz. 50%
Ft. Madison Dixie Tobacco Hoe.....75&10&7½%
Kretsinger's Cut Easy.....70&10%
Warren Hoe.....45&10%
W. & C. Ivanhoe.....75&2
B. B. 6 in., Cultivator Hoe.....$3.15
B. B., 6½ in.....$3.35
Acme Wedding.....℔ doz., net, $4.35
W. & C. L'tning Shuffle Hoe, ℔ doz.$4.85

Hoisting Apparatus—

See *Machines, Hoisting.*

Holders— Bit—

Angular, ℔ doz. $24.00.....45&10%

Door—

Bardsley's.....45%
Empire.....50%
Pullman.....50%

File and Tool—

Nicholson File Holders and File Handles.....33⅓&10%

Fruit Jar—

Triumph Fruit Jar Holder, ℔ gross, $10.80; ℔ doz.....$1.25

Hooks—Cast Iron—

Bird Cage, Reading.....40%
Bird Cage, Sargent's List.....60&10%
Ceiling, Sargent's List.....50&10&10%
Clothes Line, Reading List.....40%
Clothes Line, Sargent's List.50&20&10%
Coat and Hat, Sargent's List...50&10%
Clothes Line, Stowell's.....70%
Coat and Hat, Reading.....45&20%
Coat and Hat, Stowell's.....70%
Coat and Hat, Wrightsville.....65%
Harness, Reading List.....40%
Harness, Stowell's.....60%
School House, Stowell's.....70%

Wire—

Belt.....80&10@..%
Wire C. & H. Hooks.....
75&10@75&10&10%
Atlas, Coat and Hat:
Single Cases.....75%
10 Case Lots.....75&10%
Columbian Hdw. Co., Gem.....60&10%
Parker Wire Goods Co., King..75&10%
Van Wagoner, Coat and Hat.....70%
Western W. G. Co. Molding.....75%
Wire Goods Co.:
Acme.....60&10%
Chief.....70%
Crown.....70&10%
Czar.....65%
V Brace.....70&10%
Czar Harness.....60&10%

Wrought Iron—

Box, 6 in., per doz., $1.00; 8 in., $1.25; 10 in., $2.50.
Cotton.....*doz. $1.05@$1.25*
Wrought Staples, Hooks, &c.—
See Wrought Goods.

Miscellaneous—

Hooks, Bench, see *Stops, Bench. Bush, Light, doz. $1.75; Medium, $5.35; Heavy, $6.25*
Grass, best, all sizes, per doz.$1.50
Grass, common grades, all sizes, per doz......*$1.30*
Whiffletree.....*lb. 5¾@6¢*
Hooks and Eyes:
Brass.....60&10&5@60&10&10%
Malleable Iron..70&10@70&10&10%
Covert Mfg. Co. Gate and Scuttle Hooks.....35%
Covert Saddlery Works' Self Locking Gate and Door Hook.....60%
Ft. Madison Cut-Easy Corn Hooks, ℔ doz. $3.25 net
Bench Hooks—See Bench Stops.
Corn Hooks—See Knives, Corn.

Horse Nails—

See *Nails, Horse.*

Horseshoes—

See *Shoes, Horses.*

Hose, Rubber—

Garden Hose, ¾-inch:
Competition.....*ft. 5 @ 6 ¢*
3-ply Standard.....*ft. 8 @ 9 ¢*
4-ply Standard.....*ft. 10 @11 ¢*
3-ply extra.....*ft. 11 @13 ¢*
4-ply extra.....*ft. 14 @16 ¢*
Cotton Garden, ¾-in., coupled:
Low Grade.....*ft. 8 @ 9 ¢*
Fair Quality.....*ft. 10 @11 ¢*

Irons— Sad—

From 4 to 10.....*lb. 2¾@3 ¢*
B. B. Sad Irons.....*lb. 3¼@3½¢*
Chinese Laundry.....*lb. 4¾@5 ¢*
Chinese Sad.....*lb. 4 @4¼¢*
Mrs. Potts', cents per set:

Nos.	50	55	60	65
Jap'd Tops	62	59	72	69
Tin'd Tops	65	62	75	72

New England Pressing..lb. 3¾@4¢

Pinking—

Pinking Irons.....*doz. 50@60¢*

Soldering—

Soldering Coppers, 2½ & 3..20@21¢
1½ & 2.....*22@23¢*

Jacks, Wagon—

Covert Mfg. Co.:
Auto Screw.....30&2%
Steel.....45%
Covert's Saddlery Works:
Daisy.....60&10%
Victor.....60%
Lockport.....50%
Lane's Steel.....30&10&5%
Richards' Tiger Steel, No. 130.....40%

Kettles—

Brass, Spun, Plain.....*20@25%*
Enameled and Cast Iron—See Ware, Hollow.

Knives—

Butcher, Kitchen, &c.—

Foster Bros.' Butcher, &c.....30%
Smith & Hemenway Co.....40&10%
Wilkinson Shear & Cutlery Co.....50%

Corn—

Withington Acme, ℔ doz., $2.65; Dent, $2.75; Adj. Serrated, $2.20; Serrated, $2.10; Yankee No. 1, $1.50; Yankee No. 2, $1.15.

Drawing—

Standard List.....*75%*
C. E. Jennings & Co., Nos. 45, 46..60%
Jennings & Griffin, Nos. 41, 42.....60%
Ohio Tool Co.'s.....70%
Swan's.....70&10&2½%
Watrous.....16⅔%
L. & I. J. White.....20&5@25%

Hay and Straw—

Serrated Edge..per doz.$5.25@5.50
Iwan's Sickle Edge.....℔ doz. $9.50
Iwan's Serrated.....℔ doz. $10.00

Mincing—

Buffalo.....℔ gro. $13.00

Miscellaneous—

Farriers'.....*doz. $3.00@3.25*
Wostenholm's.....℔ doz. $3.00@3.25

Knobs—

Base, 2½-inch, Birch, or Maple, Rubber tip.....*gro.$1.15@1.20*
Carriage, Jap., all sizes.....
gro. 40@45¢
Door, Mineral.....*doz. 65@70¢*
Door, Por. Jap'd.....*doz. 70@75¢*
Door, Por. Nickel..*doz. $2.05@2.15*
Bardsley's Wood Door, Shutters, &c.15%
Picture, Sargent's.....60&10&10%

Lacing, Leather—

See *Belting, Leather—*

Ladders, Store, &c.—

Lane's Store.....25%
Myers' Noiseless Store Ladders....50%
Richards Mfg. Co.:
Improved Noiseless, No. 112.....40%
Climax Shelf, No. 113.....40%
Trolley, No. 109.....40%

Ladles, Melting—

L. & G. Mfg. Co. (low list).....25%
P. S. & W.....50%
Reading.....60%
Sargent's.....50&10%

Lanterns—Tubular—

Regular Tubular, No. 0.....
doz. $4.25@4.85
Lift Tubular, No. 0.....
doz. $4.50@5.15
Hinge Tubular, No. 0.....
doz. $4.50@5.15
Other Styles.....*40&10@40&10&5%*

Bull's Eye Police—

No. 1, 2¾-inch.....*$2.50@2.75*
No. 2, 3-inch.....*$2.75@3.00*

Lasts and Stands, Shoe—

Stowell's Atlas, Malleable Iron.....50%
Stowell's Badger, Cast Iron.....50%

Latches— Thumb—

Roggin's Latches, with screw..
doz. 35@40¢

Door—

Richards' Bull Dog, Heavy, No. 125.40%
Richards' Trump, No. 121.....50%

Leaders, Cattle—

Small.....*doz. 50¢; large, 60¢*
Covert Mfg. Co., Cotton and Hemp.45%

Lifters, Transom—

R. & E.....33⅓%

Lines—

Wire Clothes, Nos.	*18*	*19*	*20*
100 feet	$2.20	2.00	1.70
75 feet	$1.80	1.70	1.30

Samson Cordage Works:
Solid Braided Chalk, Nos. 0 to 3..40%
Silver Lake Braided Chalk, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50.....℔ gr. 20%
Masons' Lines, Shade Cord, &c.:
White Cotton, No. 3½, $1.50; No. 4, $2.00; No. 4½, $2.50; Colors, No. 3½, $1.75; No. 4, $2.25; No. 4½, $2.75; Linen, No. 3½, $2.50; No. 4, $3.50; No. 4½, $4.50.....20%
Tent and Awning Lines: No. 5, White Cotton, $7.50; Drab Cotton, $8.50.....20%
Clothes Lines, White Cotton: 50 ft., $2.75; 60 ft., $3.25; 7.. ft., $3.75; 75 ft., $4.00; 80 ft., $4.25; 90 ft., $4.75; 100 ft., $5.25.....20%
Anniston Waterproof Clothes, 50 ft., ℔ gro., $24.00; Gilt Edge, $22.00; Air Line, $22.00; Acme, $17.00; Alabama, $15.00; Empire, $14.00; Advance, $13.50; Oriole, $20.00; Albemarle, $13.50; Eclipse, $12.50; Chicago, $11.00; Standard, $10.00; Columbia, $8.50; Allston, $12.50; Calhoun, $11.00.

Locks— Cabinet—

Cabinet Locks...*33⅓&33⅓&7½%*

Door Locks, Latches, &c.—

NOTE.—Net Prices are very often made on these goods.
Reading Hardware Co.....40%
H. & Mfg. Co.....40%
Sargent & Co.....40&10%
Stowell's Steel Door Latches.....50%

Elevator—

Stowell's.....50%

Padlocks—

Wrought Iron....*75&10&5@80&5%*
R. & E. Mfg. Co. Wrought Steel and Brass.....75@75&10%

Sash, &c.—

Ives' Patent:
Bronze and Brass.....62½%
Crescent.....50&10%
Iron.....62½%
Window Ventilating.....60%
Robison Patent Ventilating Sash Lock.....40%
Wrought Bronze and Brass.....55%
Wrought Steel.....55%
Pullman Patent Ventilating Lock..25%
Reading.....40%

Machines—Boring—

Com. Upr't, without Augers..$2.00
Com. Ang'l'r, without Augers.$2.25

Without Augers.			
R. & E. Mfg. Co.: Upright.		Angular.	
Improved No. 3..	$4.25	No. 1..	$5.00
Improved No. 4..	3.75	No. 2..	3.38
Improved No. 5..	2.75		
Jennings', Nos. 1 and 4			35&5%
Millers' Falls			5.75
Snell's, Rice's Pat.			2.50

Corking—

Reisinger Invincible Hand Power.....
℔ doz. $48.00

Fence—

Williams' Fence Machines....each, $5.50

Hoisting—

Moore's Anti-Friction Differential Pulley Block.....30%
Moore's Hand Hoist, with Lock Brake.....20%

Ice Cutting—

Chandler's.....12½%

Washing—

Boss Washing Machine Co.:	Per doz.
Champion Rotary Banner No. 1..	$54 00
Standard Champion No. 1	$48.00
Standard Perfection	$26.00
Cinti Square Western	$30.00
Uneeda American, Round	$29.00

Mallets—

Hickory.....*45&5@50%*
Lignumvitæ.....*45&5@50%*
Tinners' Hickory and Apple-wood.....*doz. 45&5@50%*

Mangers, Stable—

Swett Iron Works.....50%

Mashers, Vegetable—

Western, W. G. Co., Potato....60&10%

Mats, Door—

Elastic Steel (W. G. Co.).....10%

Mattocks—

See *Picks and Mattocks.*

Milk Cans—See *Cans, Milk.*

Mills, Coffee, &c.—

Enterprise Mfg. Co.....25@30%
National list Jan. 1, 1902.....30%
Parker's Columbia & Victoria..50&10@60%
Parker's Box and Side.....50&10@60%
Swift, Lane Bros. Co.....30%

Mowers, Lawn—

NOTE.—Net prices are generally quoted
Cheap.....*all sizes, $1.75@2.00*
Good.....*all sizes, $2.25@2.50*

	10	*12*	*14*	*16-in.*
High Grade	4.25	4.50	4.75	5.00

Continental.....60&5%
Great American.....70%
Great American Ball B'r'g, new list.70%
Quaker City.....70%
Pennsylvania.....60&5%
Pennsylvania, Jr., Ball Bearing....60%
Pennsylvania Golf.....50%
Pennsylvania Horse.....33⅓&5%
Pennsylvania Pony.....40&5%
Philadelphia:
Styles M., S., C., K., T.....70&5%
Style A, all Steel.....60&5%
Style E, High Wheel.....70&10&5%
Drexel and Gold Coin, special list.50%

Nails—

Wire Nails and Brads, Papered, List July 20, 1899..85&10&10@90%
Cut and Wire. See *Trade Report.*
Hungarian, Finishing, Upholsterers' &c. See *Tacks.*

Horse—

Nos.	6	7	8	9	10	
Anchor	23	21	20	19	18	..40&5%
Champlain	28	26	25	24	23	.....50%
Coleman	13	12	12	11	11	.....net
New Haven	23	21	20	19	18	..40&5%
Putnam	23	21	20	19	18	....33⅓%
New Putnam	19	18	17	16	16	..10&10%

Western.....℔ lb 8½¢
Jobbers' Special Brands.....
per lb. 8½@10¢

Picture—

	1½	2	2½	3	3½ in.
Brass H'd.	.45	.55	.60	.70	.. gro
Por. Head	1.10	1.10	1.10	..	gro

Nippers—

See *Pliers and Nippers.*

Nuts—

Cold Punched: *Off list.*
Mfrs. or U. S. Standard.
Square, Blank.....*$5.00*
Hexagon, Blank.....*$5.50*
Square, Blank, C. T & R..*$5.20*
Hexagon, Blank, C. T. & R. 5.90
Hot Pressed:
Mfrs., U. S. or Nar. Gauge Stan'd.
Square, Blank.....*$5.50*
Hexagon, Blank.....*$5.90*
Square, Tapped.....*$5.40*
Hexagon, Tapped.....*$5.80*

Oakum—

Best or Government...*lb. 5¾@6¢*
U. S. Navy.....*lb. 5½@5½¢*
Navy.....*lb. 4½@4¾¢*
Plumbers' Spun Oakum..*2¼@2½¢*
In carload lots ¼¢ lb. off, f.o.b. New York.

Oil Tanks—See *Tanks, Oil.*

Oilers—

Brass and Copper.....*50&10%*
Tin or Steel.....*65&10@70%*
Zinc.....*65&10@70%*
Chase or Paragon:
Brass and Copper.....*50&10%*
Tin or Steel.....*65&10%*
Zinc.....*65&10%*
Malleable, Hammers' Imp'ed, No. 1, $3.60; No. 2, $4; No. 3, $4.40. ℔ doz. 20%
Malleable, Hammers' Old Pattern, same list.....50&10%
American Tube & Stamping Co.:
Spring Bottom Cans.....70@70&10%
Railroad Oilers, &c.....60@60&10%

Openers— Can—

Per doz.
Sprague, Iron Handle....*30@35¢*
Sprague, Wood Handle...*35@40¢*
Sardine Scissors.....*$1.75@$3.00*
National.....50%
Stowell's Sprague.....℔ doz. 35@45¢
Vim Tin Shear and Can Opener, ℔ doz., 75c.; per gro., $7.50

Egg—

Nickel Plate.....℔ doz., $2.00
Silver Plate.....℔ doz., $4.00

Packing—

Asbestos Packing, Wick and Rope.....*lb. 14@16¢*

Rubber—

(Fair quality goods.)
Sheet, C. I.....*8@10¢*
Sheet, C. O. S.....*9@13¢*
Sheet, C. B. S.....*10@14¢*
Sheet, Pure Gum.....*50@65¢*
Sheet, Red.....*40@50¢*
Jenkins' '98, ℔ lb 80¢.....25@25&5%

Miscellaneous—

American Packing...*lb. 7@10 ¢*
Cotton Packing.....*lb. 16@25 ¢*
Italian Packing.....*lb. 9@12½¢*
Jute.....*lb. 4@ 4½¢*
Russia Packing.....*lb. 8@11 ¢*

Pails, Creamery—

S. S. & Co., with gauges—No. 1, $3.25; No. 2, $6.50 ℔ doz.

Pails, Water, Well, &c.—

See *Buckets.*

Pans— Dripping—

Standard List.60&10@60&10&12½%

Fry—

Common Lipped:

Nos.	*1*	*2*	*3*	*4*	*5*
Per doz.	$0.75	0.80	0.90	1.10	1.30

Refrigerator, Galva.—

Inch	*12*	*14*	*16*	*18*
Per doz	$1.95	2.25	2.80	3.15

Roasting and Baking—

Regal, S. S. & Co., ℔ doz., Nos. 5, $4.50; 10, $5.25; 20, $5.75; 30, $6.25.
Savory, ℔ doz., net, Nos. 200, $9.00; 400, $15.00.
Simplex, ℔ gro.:

No.	40	50	60	140	150	160
	$30.00	35.00	42.00	34.00	39.00	46.00

Paper—Building Paper

Asbestos: *lb.*
Building Felt.....*6¢*
Mill Board, sheet, 40x40 in., 1-32 to ½ in.....*10¢*
Roll Board, 1-16 in. and under.....*6¢*
Roll Board, 3-32 and ⅛ in..*8¢*
} 33⅓%

Per roll
Rosin Sized Sheathing: 500 sq. ft.
Light weight, 25 lbs. to roll
35@40¢
Medium weight, 30 lbs. to roll, 40@43¢
Heavy weight, 40 lbs. to roll..
56@60¢
Black Water Proof Sheathing, 500 sq. ft., 1 ply, 65¢; 2 ply, 85¢; 3 ply, $1.10; 4 ply, $1.25.
Deafening Felt, 9, 6 and 4½ sq. ft. to lb. ton.....*$38.00@40.00*
Red Rope Roofing, 250 sq. ft. per roll.....*$1.75*

Tarred Paper—

1 ply (roll 500 sq. ft.), ton....
$32.50@35.50
2 ply, roll 108 sq. ft.....*55@60¢*
3 ply, roll 108 sq. ft.....*78@85¢*
Slater's Felt (roll 500 sq. ft.).*75¢*
R. R. M. Stone Surfaced Roofing (roll 110 sq. ft.).....$2.75

Sand and Emery—
Flint Paper and Cloth.60@60&10%
Garnet Paper and Cloth....25%
Emery Paper and Cl'h.50&10@60%

Parers— Apple—
Advance ..... ₱ doz. $4.00
Baldwin ..... ₱ doz. $4.00
Bonanza Improved.....each $6.50
Daisy ..... ₱ doz. $4.00
Dandy .....each $7.50
Eureka Improved.....each $20.00
Family Bay State..... ₱ doz. $15.00
Improved Bay State..... ₱ doz. $36.00
Little Star..... ₱ doz. $5.00
New Lightning..... ₱ doz. $7.00
Reading 72..... ₱ doz. $3.25
Reading 78..... ₱ doz. $6.25
Rocking Table..... ₱ doz. $6.20
Turn Table '98..... ₱ doz. $6.00
White Mountain..... ₱ doz. $5.00

Potato—
Saratoga ..... ₱ doz. $7.00
White Mountain..... ₱ doz. $5.00

Picks and Mattocks—
List Feb 25, 1899.....75@75&5%
Cronk's Handled Garden Mattock, ₱ doz., $6.40.....33⅓%

Pinking Irons—
See *Irons, Pinking.*

Pins, Escutcheon—
Brass .....60@60&10%
Iron, list Nov. 11, '85..60@60&10%

Pipe, Cast Iron Soil—
Carload lots.
Standard, 2-6 in.....60%
Extra Heavy, 2-6 in.....70%
Fittings 75%

Pipe, Merchant—
Carload Lots.

	Steel.		*Iron.*	
	Blk.	*Galv.*	*Blk.*	*Galv.*
⅛ & ¼ in.	67½	51½	65	49
⅜ & ½ in.	71½	59½	69	57
¾ to 6 in.	75½	65½	73½	63½
7 to 12 in.	70½	55½	68½	53

Pipe, Vitrified Sewer—
Carload lots.
Standard Pipe and Fittings, 2 to 24 in.:
New England.....68%
New York and New Jersey.71%
*Maryland, Delaware, E. Pa.*75%
West. Pa. and West Va....71%
Virginia 76%
Ohio, Michigan and Ky....77%
Indiana 77%
NOTE.—Carload lots are generally delivered.

Pipe, Stove—

Edwards' Nested Stove Pipe:	C. L.	L. C. L.
5 in., per 100 joints	$7.00	$8.00
6 in., per 100 joints	7.50	8.50
7 in., per 100 joints	8.50	9.50

Planes and Plane Irons—
Wood Planes—
Bench, first qual.....40&10%
Bench, Second qual.....50&10%
Molding .....33⅓&10%
Bailey's (Stanley R. & L. Co.)....40%
Chapin-Stephens Co.:
Bench, First Quality.....40@40&10%
Bench, Second Quality....50@50&10%
Molding .....33⅓@33⅓&10%
Toy and German.....40@40&10%
Chaplin's 60%
Ohio Tool Co.:
Bench, First Quality.....40@40&10%
Bench, Second Quality....50@50&10%
Molding .....33⅓@33⅓&10%
Adjustable Wood Bottom.....60%
Union 60%

Iron Planes—
Bailey's (Stanley R. & L. Co.)....40%
Chaplin's Iron Planes.....50&10%
Miscellaneous Planes (Stanley R. & L. Co.)..... 35%
Ohio Tool Co.'s Iron Planes.....60%
Sargent's .....60&10%
Union 60%

Plane Irons—
Wood Bench Plane Irons..... *25&10@30%*
Buck Bros.....30
Chapin-Stephens Co.....30@30&10%
Ohio Tool Co.....30%
Stanley R. & L. Co.....35%
Union 50%
L. & I. J. White.....20&5@25%

Planters, Corn, Hand—
Kohler's Eclipse..... ₱ doz. $8.50

Plates—
Felloe .....*lb. 3¾@4¼¢*
Self-Sealing Pie Plates (S., S. & Co.), ₱ doz, $2.00.....50%

Pliers and Nippers—
Button Pliers.....75&10@80%
Gas Burner, per doz., 5 in., $1.25 @ $1.30; 6 in., $1.45 @ $1.50.
Gas Pipe.. 7 8 10 12-in.
$2.00 $2.25 $3.00 $3.75
Acme Nippers.....50@50&5%
Cronk & Carrier Mfg. Co.:
American Button.....75&10%
Cronk's 60%
Improved Button.....60&10%
Stub's Pattern.....50%
Combination and others.....33⅓%
Heller's Farriers' Nippers, Pincers and Tools .....40&10@40&10&10%
P., S. & W. Tinners' Cutting Nippers .....30@30&10%
Swedish Side, End and Diagonal Cutting Pliers.....50%
Utica Drop Forge & Tool Co.:
Pliers and Nippers, all kinds.....40%

Plumbs and Levels—
Chapin-Stephens Co.:
Plumbs and Levels.....30@30&10&10%
Chapin's Imp. Brass Cor.40@40&10&10%
Pocket Levels.....30@30&10&10%
Disston's Plumbs and Levels.....70%
Disston's Pocket Levels.....70%
C. E. Jennings & Co.'s Iron.....33⅓%
C. E. Jennings & Co.'s Iron, Adjustable .....40&7½%
Stanley R. & L. Co.....45%
Stanley's Duplex.....35%
Woods' Extension.....33⅓%

Poachers, Egg—
Buffalo Steam Egg Poachers, ₱ doz., No. 1, $6.00; No. 2, $9.00; No. 3, $9.00; No. 4, $12.00.....50%

Points, Glaziers'—
Bulk and 1-lb. papers,lb.8½@9 ¢
½-lb. papers.....*lb.9 @9½¢*
¼-lb. papers.....*lb.9¾@10¼¢*

Pokes, Animal—
Ft. Madison Hawkeye..... ₱ doz. $3.25
Ft. Madison Western..... ₱ doz. $4.00

Police Goods—
Manufacturers' Lists...25@25&5%
Tower's 25%

Polish—Metal, Etc—
Glasbrite, No. 2, 5 lb can (powder), each, $1.25; ₱ doz., $12.00; No. 2, 10 lb can (cake), each, $2.50; ₱ doz., $24.00.
Prestoline Liquid, No. 1 (½ pt.). ₱ doz., $3.00; No. 2 (1 qu.), $9.72.....40%
Prestoline Paste.....40&10%
George William Hoffman:
U. S. Metal Polish Paste, 3 oz. boxes, ₱ doz. 50¢; ₱ gro. $4.50; ½ lb boxes, ₱ doz. $1.25; 1 lb boxes, ₱ doz. $2.25.
U. S. Liquid, 8 oz. cans, ₱ doz., $1.25; ₱ gro., $12.00.
Barkeepers' Friend Metal Polish, ₱ doz., $1.75; ₱ gro., $18.00.
Wynn's White Silk, ½ pt. cans, ₱ doz. $2.00

Stove—
Black Eagle Benzine Paste, 5 lb cans, ₱ lb 10¢
Black Eagle, Liquid, ½ pt. cans.. ₱ doz. 75¢
Black Jack Paste, ¾ lb cans, ₱ gr. $9.00
Black Kid Paste, 5 lb can....each, $0.65
Ladd's Black Beauty, gr. $10.00.....50%
Joseph Dixon's, ₱ gr. $5.75.....10%
Dixon's Plumbago..... ₱ lb 8¢
Fireside ..... ₱ gr. $2.50
Gem, ₱ gr. $1.50.....10%
Japanese ..... ₱ gr. $3.50
Jet Black..... ₱ gr. $3.50
Peerless Iron Enamel, 10 oz. cans.. ₱ doz. $1.50
Wynn's:
Black Silk, 5 lb pail.....each 70¢
Black Silk, ½ lb box..... ₱ doz. $1.00
Black Silk, 5 oz. box..... ₱ doz. $0.75
Black Silk, ½ pt. liq..... ₱ doz. $1.00

Poppers, Corn—
1 qt., Square.....*gro. $9.00*
1 qt., Round.....*gro. $10.00*
1½ qt., Square.....*gro. $11.00*
2 qt., Square.....*gro. $13.00*

Post Hole and Tree Augers and Diggers—
See also *Diggers, Post Hole, &c.*

Posts, Steel—
Steel Fence Posts, each, 5 ft., 42¢; 6 ft., 46¢; 6½ ft., 48¢.
Steel Hitching Posts.....each $1.30

Potato Parers—
See *Parers, Potato.*

Pots, Glue—
Enameled *40%*
Tinned *35%*

Powder—
In Canisters:
Duck, 1 lb.....*each 45¢*
Fine Sporting, 1 lb....*each 75¢*
Rifle, ½-lb.....*each 15¢*
Rifle, 1-lb.....*each 25¢*
In Kegs:
12½-lb. kegs.....*$2.50*
25-lb. kegs.....*$4.50*
King's Semi-Smokeless:

Keg (25 lb bulk)	$6.50
Half Keg (12½ lb bulk)	$3.50
Quarter Keg (6¼ lb bulk)	$1.90
Case 24 (1 lb cans bulk)	$8.50
Half case (1 lb cans bulk)	$4.50

King's Smokeless:

	Shot Gun.	Rifle.
Keg (25 lb bulk)	$12.00	$15.00
Half Keg (12½ lb bulk)	6.25	7.75
Quarter Keg (6¼ lb bulk)	3.25	4.00
Case 24 (1 lb cans bulk)	14.00	17.00
Half case 12 (1 lb c. bk)	7.25	8.75

Robin Hood Sm'less Shot Gun..50&20%

Presses—
Fruit and Jelly—
Enterprise Mfg. Co.....20@25%
Seal Presses—
Morrill's No. 1, ₱ doz., $20.00.....50%

Pruning Hooks and Shears
See *Shears.*

Pullers, Cork—
Invincible Cork Puller.....$21.00

Pullers, Nail—
Cyclops 50%
Miller's Falls, No. 3, ₱ doz., $12.00.....33⅓&10%
Morrill's No. 1, Nail Puller, ₱ doz. $20.00 .....50%
Pearson No. 1, Cyclone Spike Puller, each $30.00.....50%
Pelican, ₱ doz. $9.00.....40&10%
Scranton, Case Lots:
No. 2B (large).....$5.50
No. 3B (small).....$5.00
Smith & Hemenway Co.:
Diamond B, No. 2, case lots..... ₱ doz. $6.00
Diamond B, No. 3, case lots..... ₱ doz. $5.50
Giant No. 1, ₱ doz. $18; No. 2, $16.50; No. 3, $15.....40%
Parrot Tack and Stub Puller, ₱ doz., 75c.; ₱ gro., $6.00

Pulleys, Single Wheel—

Inch	*1½*	*1¾*	*2*	*3*
Awning or Tackle, doz.	*$0.30*	*.35*	*.60*	*1.05*

Hay Fork, Swivel or Solid Eye. doz., ¼ in., $1.25; 5 in., $1.55

Inch	*2*	*2¼*	*2½*
Hot House, doz.	*$0.65*	*.85*	*1.20*

Inch	*1¼*	*1½*	*1¾*	*2*
Screw, doz....	*$0.16*	*.19*	*.23*	*.30*
Inch	*1¾*	*2*	*2¼*	*2½*
Side, doz.....	*$0.25*	*.40*	*.55*	*.60*
Inch	*1½*	*1¾*	*2*	*2½*

Stowell's:
Ceiling or End, Anti-Friction..60&10%
Dumb Waiter, Anti-Friction..60&10%
Electric Light.....60%
Side, Anti-Friction.....60&10%

Sash Pulleys—
Common Frame; Square or Round End, per doz, 1¾ and 2 in.....*16@19¢*
Auger Mortise, no Face Plate, per doz., 1¾ and 2 in..*16@19¢*
Acme.....1¾ in., 16¢; 2 in., 19¢
Fox-All-Steel, Nos. 3 and 7, 2 in.... ₱ doz. 50
Grand Rapids All Steel Noiseless..50
Ideal .....70&10
Niagara.....1¾ in., 16¢; 2 in., 19¢
No. 26, Troy..1¾ in., 14½¢; 2 in., 16½¢
Star.....1¾ in., 16¢; 2 in., 19¢
Tackle Blocks—See Blocks.

Pumps—
Cistern .....*60@60&10%*
Pitcher Spout.....*80@80&10%*
Wood Pumps, Tubing, &c..*45@50%*
Barnes Dbl. Acting (low list).....50
Barnes' Pitcher Spout.....75&10&5
Contractors' Rubber Diaphragm No. 2, B. & L. Block Co.....$16.00
Daisy Spray Pump..... ₱ doz. $7.20
Flint & Walling's, Fast Mail Hand, (low list).....55
Flint & Walling's Fast Mail (low list) .....55&5
Flint & Walling's Tight Top Pitcher.80
National Specialty Mfg. Co., Measuring, $6.00.....30
Mechanical Sprayer.....$7.20
Myers' Pumps (low list).....50
Myers' Power Pumps.....50
Myers' Spray Pumps.....50

Pump Leathers—
Plunger and Lower Valve—Per gro.:

Inch...	*2*	*2¼*	*2½*	*2¾*
	$2.20	*2.50*	*2.75*	*3.00*
Inch...	*3*	*3¼*	*3½*	*3¾*	*4*
	$3.30	*3.60*	*3.85*	*4.10*	*4.40*

Plunger Cup Leathers—Per 100:

Inch...	*2½*	*3*	*3½*	*4*
	$2.75	*3.85*	*5.00*	*6.00*

Punches—
Saddlers' or Drive, good..... *doz. 50@75¢*
Spring, single tube, good quality .....*$1.75@2.00*
Revolving (4 tubes)..... *doz. $3.50@3.75*
Bemis & Call Co.'s Cast St'l Drive.50%
Bemis & Call Co.'s Check.....55
Morrill's No. 1 (A.B.C.), ₱ doz. $15.50
No. 2, ₱ doz, $22.50.....50
Hercules, each $7.50.....50%
Niagara Hollow Punches.....40
Niagara Solid Punches.....55&10%
Steel Screw, B. & K. Mfg. Co.....50%
Tinners' Hollow, P., S. & W. Co.35@35&5%
Tinners' Solid, P., S. & W. Co., ₱ doz., $1.44.....60%

Rail—Barn Door, &c.—
Cast Iron Barn Door; Flange Screw Holes for Rd. Groove Wheels:

½	⅝	¾ in.	
$2.50	*$3.00*	*$4.40*	*100 feet.*

Angular for Sq. Groove Wheels:

Small.	*Med.*	*Large.*	
$2.00	*$2.70*	*$3.60*	*100 feet.*

Sliding Door, Painted Iron.... *2½@2¾¢*
Sliding Door, Wrought Brass, 1⅛ in., lb., 36¢.....*30%*
Allith Mfg. Co.:
No. 1, Reliable Hgr. Track, ₱ ft. 5½¢
No. 2, Reliable Hgr. Track, ₱ ft. 7¢
Cronk's:
Double Braced Steel Rail....₱ ft. 3¢
O. N. T. Rail.....2¾¢
Griffin's:
xxx, ₱ 100 ft., 1 x 3-16 in., $3.00; 1¼ x 3-16 in., 3.50.
Hinged Hanger, ₱ 100 ft., 1 x 3-16 in., $3.10; 1¼ x 3-16 in., $3.60.
Lane's:
Hinged Track, ₱ 100 ft., 1 in., $3.70; 1¼ in., $4.40.
O. N. T., ₱ 100 ft., 1 in., $2.75; 1¼ in., $3.50; 1½ in., $4.00.
Standard, 1¼ in.....₱ 100 ft. $4.00
Lawrence Bros.:
₱ 100 ft. No. 201, $4.00; No. 202, $4.40.
New York, 1 x 3-16 in., ₱ 100 ft. $2.75
McKinney's:
Hinged Hanger Rail, ₱ ft., 11¢..50%
None Better..... ₱ ft. 3¾¢
Standard ..... ₱ ft. 4 ¢
Myers' Stayon Track.....60%
Richards' Mfg. Co.:
Common 1 x 3-16 in., $2.75; 1¼ x 3-16, $3.25; 1¼ x 3-16, $3.50.
Special Hinged Hanger Rail.....$4.40
Fire Door Track, ₱ ft., 2½ x ⅜, 15¢; 3½ x ⅜, 9¢.
Lag Screw Rail, No. 65.....40%
Gauge Trolley Track, ₱ ft., No. 31, 10¢; No. 32, 15¢; No. 33, 24¢.
Safety Door Hanger Co.'s Storm King Safety.....60%
Safety Door Hanger Co.'s U. S. Standard 60%
Stowell's:
Cast Rail.....₱ ft. 1¾¢
Steel Rail, Plain.....25%
Wrought Bracket, 1 3-16 in....₱ ft. 3¢
Wrought Bracket, 1½ x 5-16..₱ ft. 7¢
Swett's Hylo, ₱ ft. 11¢.....60%
P. L. B. Steel Rail.....₱ 100 ft. $3.00
No. 0, 1 x 3-16.....₱ 100 ft. $2.75

Rakes—
NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.
Fort Madison Red Head Lawn....$3.25
Fort Madison Blue Head Lawn....$2.70
Jackson Lawn, 29 and 30 teeth, ₱ doz., net.....$4.25
Cronk's:
New Champion Garden, ₱ doz., 12 teeth, $15.00; 14, $16.50; 16, $18.00..75%
Victor Garden, ₱ doz., 12 teeth, $15.00; 14, $16.50; 16, $18.00....75&25%
Queen City Lawn, ₱ doz., 20 teeth, $3.45; 24, $3.60.....
Anticlog Lawn, ₱ doz.....$4.00
Malleable Garden.....70&10%
Kohler's:
Lawn Queen, 20-tooth..... ₱ doz. $3.45
Lawn Queen, 24-tooth..... ₱ doz. $3.60
Paragon, 20-tooth..... ₱ doz. $2.75
Paragon, 24-tooth..... ₱ doz. $3.00
Steel Garden, 14-tooth.... ₱ doz. $2.88
Malleable Garden, 14-tooth, ₱ doz. $1.75@2.00
Weldless Steel Garden.....75&5%

Rasps, Horse—
Disston's 75%
Heller Bros.'.....70&5@70&10&5
McCaffrey's American St'd...60&10&5
New Nicholson.....70&10@75%
See also Files.

Razors—
Borasic 60%
Fox Razors, No. 42...₱ doz. $20.00 } 40%
Fox Razors, No. 44...₱ doz. $20.00 } 10%
Fox Razors, No. 82, Platina... ₱ doz. $25.00 } 40%
Red Devil.....60%
Sage & Hatch:
Arbo Anti-Rust..... ₱ doz. $10.00
Herbrand ..... ₱ doz. $6.00
Barber ..... ₱ doz. $6.00
Silberstein:
Carbo Magnetic.....$18.00
Griffon, No. 65.....$15.00
Griffon, No. 00.....$12.00
All other Razors.....40%

Safety Razors—
Silberstein 40%

Reels, Fishing—
Hendryx:
M 6, Q 6, A 6, B 6, M 9¼, M 16, Q 16, A 16, B 16, 4008, Rubber, Populo, Nickeled Populo.....20%
Aluminum, German Silv., Bronze.25%
1240 N, 124 N.....20%
3004 N, 06 N, 6 RM, G 9.....25%
4 N, 6 PN, 24 N, 26 PN.....20%
2904 P.....33⅓%
2904 PN.....33⅓%
0924 N.....33⅓%
02084 N.....33⅓%
002904 PN.....33⅓%
802 N.....33⅓%
986 PN, 2904 N, 974 PN.....25%
5009 PN, 5009 N.....20%
Competitor, 102 P, 102 PN, 202 P, 202 PN, 102 PR, 202 PR.....20%
304 P, 304 PN, 00304 P, 00304 PN.33⅓%

Registers—*List July 1, 1903.*
Japanned, Electroplated and Bronzed .....*70&10%*
Bronzed *75%*

Revolvers—
Single Action.....*95¢@$1.00*
Double Action, except 44 cal..*$1.85*
Double Action, 44 caliber....*$2.00*
Automatic *$3.45*
Hammerless *$4.00*
NOTE.—Jobbers frequently cut the above prices of manufacturers for small trade.

Riddles, Hardware Grade
16 in.....*per doz. $2.25@$2.50*
17 in.....*per doz. $2.50@$2.75*
18 in.....*per doz. $2.75@$3.00*

Rings and Ringers—
Bull Rings—

	2	*2½*	*3 inch.*
Steel	*$0.70*	*0.75*	*0.80 doz.*
Copper	*$1.00*	*1.15*	*1.40 doz.*

Rea's Improved Self-Piercing, Copper, 2 in., ₱ doz., $1.25; 2½ in., $1.50; 3 in., $1.75.

Hog Rings and Ringers—
Hill's Rings, gro. boxes.$4.00@4.50
Hill's Ringers, Gray Iron..... *doz. 50@55¢*
Hill's Ringers, Malleable Iron.. *doz. 70@75¢*
Blair's Rings...*per gro.$4.75@5.25*
Blair's Ringers.per doz. $0.60@ .65
Brown's Rings..per gro.$5.00@5.50
Brown's Ringers.per doz.$0.60@ .65

Rivets and Burrs—
Copper .....*50&10@60%*
Iron or Steel.....*75@75&5%*

Rollers—
Acme, Stowell's Anti-Friction.....50%
Barn Door, Sargent's list.....60%
Cronk's Stay.....72¢
Cronk's Brinkerhoff.....90¢
Lane's Stay.....40%
Richards' Stay:
Handy Adj. and Reversible No. 53.50%
O. K. Adj. and Reversible No. 58.50%
Lag Screw, Nos. 55 and 57.....50%
Fire Door, No. 59.....40%
Favorite, No. 54.....40%
Stowell's Barn Door Stay..₱ doz. $1.00
Swett's Anti-Friction.....50%
Screw and Spike Stay..... ₱ doz. 65¢
Hinge Adjustable Stay..... ₱ doz. 90¢

Rope—
Manila, 7-16 in. diam. and larger: Pure.....*lb. 11½@12¢*
Sisal, 7-16 in. diam. and larger: Mixed.....*lb. 8¢@8¼¢*
Pure.....*lb. 9¼@9¾¢*
Sisal, Hay, Hide and Bale Ropes, Medium and Coarse: Mixed.....*lb. 8¢@8¼¢*
Pure.....*lb. 9¢@9¼¢*
Sisal, Tarred, Medium Lath Yarn: Mixed.....*lb. 7¾¢*
Pure.....*lb. 9¢*
Cotton Rope: Lb.
Best, ¼-in. and larger.....*16¢*
Medium, ¼-in. and larger...*14¢*
Common, ¼-in. and larger. 10½¢
Jute Rope: Thread No. 1, ¼-in. & up. lb. 6¼¢

*Thread No. 2, ¼-in. & up, lb.*5¾¢
Old Colony Manila Transmission Rope ..... ℔ lb 17½¢

Wire Rope—

Galvanized ..... 42½&2½%
Plain ..... 50&2½%

Ropes, Hammocks—

Covert Mfg. Co.:
Jute 50%
Sisal ..... 30&10%
Covert Saddlery Works ..... 60&5%

Rulers, Desk—

Stimpson & Son:
Boxwood and Maple ..... 30&10%

Rules—

Boxwood ..... 60&10&10%
Ivory ..... 35&10@35&10&5%
Chapin-Stephens Co.:
Boxwood ..... 60@60&10%
Flexifold ..... 27½&10&10&2½%
Ivory ..... 35@35&10&10%
Miscellaneous ..... 50@50&10&10%
Combination ..... 55@55&10%
Stationers' ..... 10@10&10%
Keuffel & Esser Co.:
Folding, Wood ..... 35&10%
Folding, Steel ..... 33⅓&10%
Lufkin's Steel ..... 50&10%
Lufkin's Lumber 60%
Stanley R. & L. Co.:
Boxwood 62½%
Ivory 45%
Miscellaneous 60%
Zig Zag 40%
Zig Zag, Pin Joint 42½%
Upson Nut Co.:
Boxwood ..... 60@60&10%
Ivory ..... 35&10@35&10&10%

Sash Balances—

See *Balance, Sash.*

Sash Locks—

See *Locks, Sash.*

Sash Weights—

See *Weights, Sash.*

Sausage Stuffers or Fillers

See *Stuffers or Fillers, Sausage.*

Saw Frames—

See *Frames, Saw.*

Saw Sets—See *Sets, Saw.*

Saw Tools—See *Tools, Saw.*

Saws—

Atkins':
Circular 50%
Band ..... 50&10@60%
Cross Cuts ..... 35&5%
Mulay, Mill and Drag 50%
One-Man Saw 40%
Wood Saws 40%
Hand, Compass, &c. 40%
Chapin-Stephens Co.:
Turning Saws and Frames ..... 30@30&10%
Diamond Saw & Stamping Works:
Sterling Kitchen Saws ..... 30&10&10%
Disston's:
Circular, Solid and Ins'ted Tooth 50%
Band, 2 to 14 in. wide 60%
Band, ⅛ to 1¾ 60%
Crosscuts 50%
Narrow Crosscuts 55%
Mulay, Mill and Drag 50%
Framed Woodsaws 35%
Woodsaw Blades 35%
Woodsaw Rods 25%
Hand Saws, Nos. 12, 99, 9, 16, d100, D8, 120, 76, 77, 8 ..... 25%
Hand Saws, Nos. 7, 107, 107½, 3, 1, 0, 00, Combination 30%
Compass, Key Hole, &c. 25%
Butcher Saws and Blades 35%
C. E. Jennings & Co.'s:
Back Saws 25%
Butcher Saws 30%
Compass and Key Hole Saws ..... 35&5%
Framed Wood Saws 30%
Hand Saws ..... 20&2½%
Wood Saw Blades 30%
Millers Falls:
Butcher Saws ..... 15&10%
Star Saw Blades ..... 15&10%
Peace & Richardson's Hand Saws 30%
Simonds':
Circular Saws 50%
Crescent Ground Cross Cut Saws 35%
One-Man Cross Cuts ..... 40&10%
Gang Mill, Mulay and Drag Saws 50%
Band Saws 50%
Back Saws ..... 25@25&7½%
Butcher Saws ..... 35@35&7½%
Hand Saws ..... 25@25&7½%
Hand Saws, Bay State Brand 40%
Compass, Key Hole, &c. ..... 25@25&7½%
Wood Saws ..... 35@35&7½%
Springfield Mach. Screw Co.:
Diamond Kitchen Saws ..... 40&10@50%
Butcher Saws Blades ..... 35@40%
Wheeler, Madden & Clemson Mfg. Co.'s Cross Cut Saws 50%

Hack Saws—

Atkins' Hack Saw Blades A A A 25%
Disston's:
Concave Blades 25%
Keystone 40%
Hack Saw Frames 30%
Fitchburg File Works, The Best 25%
C. E. Jennings & Co.'s:
Hack Saw Frames, Nos. 175, 180 ..... 40&7½%
Hack Saws, Nos. 175, 180, complete ..... 40&7½%
Goodell's Hack Saw Blades 40%
Griffin's Hack Saw Frames ..... 35&5&10%
Griffin's Hack Saw Blades ..... 35&5&10%
Springfield Mach. Screw Co.:
Diamond Hack Saw Blades 35%
Diamond Hack Saw Frames 50%
Star Hack Saws and Blades ..... 15&10%
Sterling Hack Saw Blades ..... 30&10&5%
Sterling Hack Saw Frames ..... 30&10&10%

Scroll—

Barnes' No. 7, $15 ..... 25%
Barnes' Scroll Saw Blades 40%
Barnes' Velocipede Power Scroll Saw, without boring attachment, $18; with boring attachment, $20 ..... 20%
Lester, complete, $10.00 ..... 15&10%
Rogers, complete, $4.00 ..... 15&10%

Scalers, Fish—

Covert's Saddlery Works ..... 60&10%

Scales—

Family, Turnbull's ..... 50@50&10%
Counter:
Hatch, Platform, ½ oz. to 4 lbs. ..... *doz. $5.50*
Two Platforms, ½ oz. to 8 lbs. ..... *doz. $16.00*
Union Platform, Plain.$1.70@1.90
Union Platform, Stpd.$1.85@2.15
Chatillon's:
Eureka 25%
Favorite 40%
Crocers' Trip Scales 50%
Chicago Scale Co.:
The "Little Detective" ..... 25 lbs 50%
Union or Family No. 2 ..... 60%
Portable Platform (reduced list) 50%
Wagon or Stock (reduced list) ..... 25@35%
"The Standard" Portables 50%
"The Standard" R. R. and Wagon 50%

Scrapers—

Box, 1 Handle ..... *doz. $2.00@2.25*
Box, 2 Handle ..... *doz. $2.60@2.85*
Ship ..... *Light, $2.00; Heavy, $4.50*
Adjustable Box Scraper (S. R. & L. Co.), $6.00 ..... 45%
Chapin-Stephens Co., Box ..... 50@50&10%

Screens, Window and Frames—

Air Line Pattern Screens ..... 60&10%
Flyer Pattern Screens ..... 60&10@60&10&5%
Maine Screen Frames ..... 40&10&5%
Perfection Screens ..... 60&10@60&10&5%
Phillips' Screen Frames ..... 60&5@60&10%
See also *Doors.*

Screws—Bench and Hand

Bench, Iron, doz., 1 in., $2.50@2.75; 1⅛, $3.00@3.25; 1¼, $3.50@3.75
Bench, W'd, Beech. doz. 30@30&5%
Hand, Wood ..... *30@30&5%*
R. Bliss Mfg. Co., Hand ..... 30@30&10%
Chapin-Stephens Co., Hand ..... 30@30&10%
Ohio Tool Co., Bench and Hand 30%

Coach, Lag and Hand Rail—

Lag, Conc Point, list Oct. 1, '99 ..... *75&17½%*
Coach, Gimlet Point, list Oct. 1, '99 ..... *75&12½%*
Hand Rail, list Jan. 1, '81 ..... *70&10@75%*

Jack Screws—

Standard List ..... *75&10@80&5%*
Millers Falls ..... 50&10&10%
Millers Falls, Roller ..... 50&10%
P., S. & W. ..... 50@50&5%
Sargent ..... 70&10%
Swett Iron Works ..... 75&10@80&5%

Machine—

List Jan. 1, '98:
Flat or Round Head, Iron ..... *50@50&10%*
Flat or Round Head, Brass ..... *50@50&10%*

Set and Cap—

Set (Iron) *80%*
Set (Steel), net advance over Iron *25%*
Sq. Hd. Cap *75%*
Hex. Hd. Cap *75%*
Rd. Hd. Cap ..... *60&10%*
Fillister Hd. Cap ..... *60&10&10%*

Wood—

List July 23, 1903.
Manufacturers' printed discounts:
Flat Head, Iron ..... *87½&10@..%*
Round Head, Iron ..... *85 &10@..%*
Flat Head, Brass ..... *85 &10@..%*
Round Head, Brass ..... *80 &10@..%*
Flat Head, Bronze ..... *77½&10@..%*
Round Head, Bronze ..... *75 &10@..%*
Drive Screws ..... *87½&10%*

Scroll Saws—

See *Saws, Scroll.*

Scythes—

Per doz.
Prices announced for next season:
Clipper Pattern, Grass *$6.20*
Full Polished, Clipper *$6.75*
Grain *$8.00*
Clipper, Grain *$8.25*
Weed and Bush *$6.25*

Seeders, Raisin—

Enterprise ..... 25&30%

Sets—Awl and Tool—

Aiken's Sets, Awl and Tools:
No. 20, ℔ doz. $10.00 ..... 50&10&10%
Fray's Adj. Tool Handles, Nos. 1, $12; 2, $18; 3, $12; 4, $9; 5, $7 ..... 50%
C. E. Jennings & Co.'s Model Tool Holders 30%
Millers Falls Adj. Tool Handles, No. 1, $12; No. 4, $12; No. 5, $18 ..... 15&10%

Garden Tool Sets—

Ft. Madison Three Plows, Hoe, Rake and Shovel ..... ℔ doz sets $9.00
Octagon ..... *gro. $3.50@3.75*
Buck Bros. 27½%
Cannon's Diamond Point, ℔ gro. $12 ..... 25%
Mayhew's ..... ℔ gro. $9.00
Snell's Cannon's Diamond Point ..... ℔ gro. $7.20
Snell's Cor'gated, Cup Pt. ..... ℔ gro. $7.20
Snell's Knurled, Cup Pt. ..... ℔ gro. $7.20
Springfield Mach. Screw Co.:
Diamond Knurled Cup Pt. ℔ gro. $7.50

Rivet—

Regular list ..... *75@75&10%*

Saw—

Aiken's:
Genuine ..... 50&10%
Imitation ..... 50&10%
Atkin's:
Criterion 40%
Adjustable 40%
Bemis & Call Co.'s:
Cross Cut 30%
Plate 20%
Disston's Star and Monarch 25%
Morrill's No. 1, $15.00 ..... 50%
Nos. 3 and 4, Cross Cut, $20.65 ..... 50%
No. 5, Mill, $30.00 ..... 50%
Nos. 10, 11, 95, $15.63 ..... 50%
No. 1 Old Style, $10.00 ..... 50%
Special, $16.25 ..... 50%
Giant Royal, Cross Cut ..... ℔ doz. $8.50
Royal, Hand ..... ℔ doz. $5.00
Taintor Positive ..... ℔ doz. $6.75

Shaving

Fox Shaving Sets, No. 30 ..... ℔ doz., net, $24.00

Sharpeners, Knife—

Chicago Wheel & Mfg. Co. 65%

Shaves, Spoke—

Iron ..... *doz.$1.10@1.25*
Wood ..... *doz.$1.75@2.25*
Bailey's (Stanley R. & L. Co.) 45%
Razor Edge (Stanley R. & L. Co.) 35%
Chapin-Stephens Co. ..... 30@30&10%
Goodell's, ℔ doz. $9.00 ..... 15&10%
Wood's F1 and F2 ..... 50%

Shears—

	7	8	9 in.	
Cast Iron..				
Best	*$16.00*	*18.00*	*20.00*	*gro.*
Good	*$13.00*	*15.00*	*17.00*	*gro.*
Cheap	*$5.00*	*6.00*	*7.00*	*gro.*

Straight Trimmers, &c.:
Best quality Jap ..... *70@70&10%*
Best quality, Nickel ..... *60@60&10%*
Fair quality, Jap ..... *80@80&5%*
Fail quality, Nickel ..... *75@7"&10%*
Tailors' Shears ..... *40@40&10%*
Acme Cast Shears ..... 40@40&5%
Heinisch's Tailor's Shears 10%
Wilkinson's Hedge, 1900 list 45%
Wilkinson's Branch, Lawn & Border 40%
Wilkinson's Sheep, 1900 list 50%

Tinners' Snips—

Steel Blades ..... *20&5@20&10%*
Steel Laid Blades ..... *40&10@50%*
Forged Handles, Steel Blades, Berlin ..... 40@40&10%
Heinisch's Snips 40%
Jennings & Griffin Mfg. Co.'s, 6½ to 10 in. 50%
Niagara Snips 40%
P., S. & W. Co. 20%

Pruning Shears and Tools

Cronk's Grape Shears 33⅓%
Cronk's Pruning Shears 33⅓%
Disston's Combined Pruning Hook and Saw, ℔ doz. $18.00 ..... 25%
Disston's Pruning Hook, ℔ doz. $12.00 ..... 25%
John T. Henry Mfg. Co.:
Pruning Shears, all grades ..... 40@40&5%
Orange Shears ..... 50&10@50&20
Grape ..... 40&10@50%
Tree Pruners 75%
P., S. & W. Co. 33⅓%

Sheaves—Sliding Door—

Stowell's Anti-Friction 50%
Patent Roller, Hatfield's, Sargent's list ..... 70&10%
Reading 40%
R. & E. list 33⅓%
Wrightsville Hatfield Pattern 80%

Sliding Shutter—

Reading list 40%
R. & E. list 33⅓%
Sargent's list ..... 50&10%

Shells—Shells, Empty—

Brass Shells, Empty:
First quality, all gauges ..... 60&5%
Climax, Club, Rival, 10 and 12 gauge ..... 65&5%
Paper Shells, Empty:
Acme, Ideal, Leader, New Rapid, Magic, 10, 12, 16 and 20 gauge ..... 25&5%
Blue Rival, New Climax, Challenge, Monarch, Defiance, Repeater, Yellow Rival, 10, 12, 16 and 20 gauge 20%
Climax, Union, League, New Rival, 10 and 12 gauge 25%
Climax, Union, League, New Rival, 14, 16 and 20 gauge ($7.50 list) 20%
Expert, Metal Lined and Pigeon, 10 12, 16 and 20 gauge ..... 33⅓&5%
Robin Hood, Low Brass ..... 20&10%
Robin Hood, High Brass ..... 30&10%

Shells, Loaded—

Loaded with Black Powder *40%*
Loaded with Smokeless Powder, medium grade ..... *40&5%*
Loaded with Smokeless Powder, high grade ..... *40&10&10%*
Robin Hood Smokeless Powder:
Robin Hood, Low Brass 50%
Comets, High Brass ..... 50&10&5%

Shoes, Horse, Mule, &c.—

F.o.b. Pittsburgh:
Iron ..... *per keg $4.00*
Steel ..... *per keg $3.75*
Burden's, all sizes ..... ℔ keg $3.90

Shot—

Drop, up to B, 25-lb. bag *$1.65*
Drop, B and larger ..... *per 25-lb. bag, $1.90*
Buck, 25-lb. bag *$1.90*
Chilled, 25-lb. bag *$1.90*

Shovels and Spades—

Association List, Nov. 15, 1902. ..... *40%*

Sieves and Sifters—

Hunter's Imitation ..... *gro. $10.50@11.00*
Hunter's Genuine ..... *per gro. $12.00@12.50*
Buffalo Metallic Blued, S. S. Co., ℔ gr.:

14&16	16&18	18&20
$13.20	$13.50	$14.40

Shaker (Barler's Pat.) Flour Sifters, ℔ doz., $2.00 ..... 20%

Sieves, Seamless Metallic

	Per dozen.			
Mesh	*14*	*16*	*18*	*20*
Iron Wire	*$1.05*	*1.05*	*1.10*	*1.20*
Tinned Wire	*$1.15*	*1.15*	*1.20*	*1.30*

Sieves, Wooden Rim—

Nested, 10, 11 and 12 Inch.
Mesh 18, Nested ..... *doz. $0.90@0.95*
Mesh 20, Nested ..... *doz. $1.00@1.05*
Mesh 24, Nested ..... *doz. $1.30@1.40*

Sinks, Cast Iron—

Prime ..... 20 @29½

NOTE.—There is not entire uniformity in lists used by jobbers.

Skeins, Wagon—

Cast Iron ..... *80&10@80&10&10%*
Steel ..... *40@40&10%*

Slates, School—

Factory Shipments.
"D" Slates ..... *50@50&10%*
Eureka, Unexcelled Noiseless ..... *60&5 tens*
Victor A, Noiseless ..... *60&5 tens &5%*

Slaw Cutters—See *Cutters.*

Snaps, Harness—

German ..... *40@40&10%*
Covert Mfg. Co.:
Derby ..... 30&2%
High Grade 35%
Jockey 35%
Trojan 30%
Yankee ..... 30&2%
Yankee Roller ..... 30&2%
Covert's Saddlery Works:
Crown 60%
German 60%
Model 60%
Triumph 60%
Oneida Community:
Solid Swivel 60%
Sargent's Patent Guarded ..... 66⅔&10%

Snaths—

Scythe *50%*

Snips, Tinners—See *Shears.*

Spoons and Forks—Silver Plated—

Good Quality ..... *50&10@ 60&5%*
Cheap ..... *60@60&10%*
International Silver Co.:
1847 Rogers Bros. and Rogers & Hamilton ..... 40&10%
Rogers & Bro., William Rogers' Eagle Brand ..... 50&10%
Anchor, Rogers Brand 60%
Wm. Rogers & Son ..... 60&10%

Miscellaneous—

German Silver ..... *60@60&5%*
Cattaraugus Cutlery Co.:
Seneca Silver 50%

Tinned Iron—

Teas ..... *per gro. 45@50¢*
Tables ..... *per gro. $0.50@$1.00*

Springs—Door—

Chicago (Coil) ..... 40&10%
Gem (Coil) 50
Pullman (Coil) 25%
Reliance (Coil) ..... 40&10%
Star (Coil) 30%
Torrey's Rod, 39 in. ..... ℔ doz. $1.10
Victor (Coil) ..... 50&10&10%

Carriage, Wagon, &c.—

1¼ in. and Wider: *Per lb*
Black ..... *4@4¼¢*
Half Bright ..... *4@4¼¢*
Bright ..... *4½@4¾¢*
Painted Seat Springs:
1½ x 2 x 26 ..... *per pr. 42¢*
1½ x 3 x 28 ..... *per pr. 70¢*

Sprinklers, Lawn—

Enterprise ..... 25@30%
Philadelphia No. 1, ℔ doz. $12; No. 2, $15; No. 3, $24 ..... 30%

Squares—

Nickel plated } *List Jan. 5, 1900.*
Steel and Iron } *75&5@75&10%*
Rosewood Hdl. Try Square and T-Bevels ..... *60&10&10@70%*
Iron Hdl. Try Squares and T-Bevels ..... *40&10@40&10&10%*
Disston's Try Sq. and T-Bevels 70%
Winterbottom's Try and Miter, No. 1, 40%; No. 2 ..... 50%

Squeezers, Lemon

Wood, Common, gro., No. 0, $5.25@$5.50; No. 1, $6.25@$6.50.
Wood, Porcelain Lined:
Cheap ..... *doz. $1.00*
Good Grade ..... *doz. $1.25*
Tinned Iron ..... *doz. $0.75@1.25*
Iron, Porcelain Lined ..... *doz. $1.75*

Staples—

Barbed Blind ..... *lb. 6@6½¢*
Electricians', Association list ..... *80&10&10&10%*
Fence Staples, Plain, $2.25; Galvanized *$2.55*
Poultry Netting Staples ..... *per lb. 3¼@3½¢*
Grand Crossing Tack Co.'s list ..... 80&10%

Steels, Butchers'—

Dick's 30%
Foster Bros. 30%
C. & A. Hoffmann's 40%

Steelyards—.... 30@30&10%

Stocks and Dies—

Blacksmiths' ..... *50@50&10%*
Curtis Rev'ble Ratchet Die Stock 25%
Derby Screw Plates 25%
Gardner Die Stocks No. 1 ..... 50%
Gardner Die Stocks, larger sizes 40%
Green River 25%
Lightning Screw Plate 25%
Little Giant 25%
Reece's New Screw Plates 25%

Stone—Scythe Stones—

Chicago Wheel & Mfg. Co.:
Gem Corundum, 10 in., $8.00 ℔ gro., 12 in., $10.80.
Norton Emery Scythe Stones:
Less than gross lots ..... ℔ gro. $9.00
One gross or more ..... ℔ gro. $7.20
Lots of 10 gross or more ..... ℔ gro. $6.00
Pike Mfg. Co., 1901 list:
Black Diamond S. S. ℔ gro. $12.00
Lamoille S. S. ..... ℔ gro. $11.00
White Mountain S. S. ℔ gro. $9.00
Green Mountain S. S. ℔ gro. $8.00
Extra Indian Pond S. S. ℔ gro. $7.50
No. 1 Indian Pond S. S. ℔ gro. $7.00
No. 2 Indian Pond S. S. ℔ gro. $4.50
Leader Red End S. S. ℔ gro. $4.50
Emery and Corundum, 10 in. ℔ gro. $9.00
Pure Corundum, 10 in., ℔ gro. $12
Crescent $7.00
Emery Scythe Rifles, 2 Coat. $8
Emery Scythe Rifles, 3 Coat. $10
Emery Scythe Rifles, 4 Coat. $12
Balance of 1904 list 33⅓%

Oil Stones, &c.—

Chicago Wheel & Mfg. Co., 1901 list:
Gem Corundum Oil, Double Grit.50%
Gem Corundum Axe, Single or Double Grit.....55%
Gem Corundum Slips.....65%
Gem Corundum Razor Hones....50%
Pike Mfg. Co., 1901 list: ℔ lb.
Arkansas St. No. 1, 3 to 5½ in.$2.00
Arkansas St. No. 1, 5½ to 8 in.$3.50
Arkansas Slips No. 1.....$4.00
Lily White Washita, 4 to 8 in.60¢
Rosy Red Washita, 4 to 8 in..60¢
Washita St., Extra, 4 to 8 in.50¢
Washita St., No. 1, 4 to 8 in,40¢
Washita St., No. 2, 4 to 8 in.30¢
Lily White Slips.....90¢
Rosy Red Slips.....90¢
Washita Slips, Extra.....80¢
Washita Slips, No. 1.....70¢
Washita Slips, No. 2.....40¢
India Oil Stones (entire list).....33⅓%
Quickcut Emery and Corundum Oil Stone, Double Grit.....33⅓%
Quickcut Emery and Corundum Axe Stone, Double Grit.....33⅓%
Quickcut Emery Rubbing Bricks.33⅓%
Hindostan No. 1, R'g'lar.℔ lb 8¢
Hindostan No. 1, Small..℔ lb 10¢
Axe Stones (all kinds).....
Turkey Oil Stones, Extra, 5 to 8 in.....℔ lb 80¢
Queer Creek Stones, 4 to 8 in.20¢
Queer Creek Slips.....40¢
Sand Stone.....6¢
Belgian, German and Swaty Razor Hones.....50%
Natural Grit Carving Knife Hones.....℔ doz. $3.00
Quick Edge Pocket Knife Hones.....℔ doz. $2.50
Mounted Kitchen Sand Stone. ℔ doz. $1.50

Stoners, Cherry—

Enterprise.....25@30%

Stoppers, Bottle—

Victor Bottle Stoppers.....℔ gro. $9.00

Stops—Bench—

Millers Falls.....15&10%
Morrill's, ℔ doz., No. 1, $10.00.....50%
Morrill's, No. 2, $12.50.....50%

Door—

Chapin-Stephens Co.....60@60&10%

Plane—

Chapin-Stephens Co.....20%

Straps—Box—

Cary's Universal, case lots..20&10&10%

Hame—

Covert's Saddlery Works.....60&10%

Stretchers, Carpet—

Cast Iron, Steel Points, doz. 60@60&10%
Socket.....doz. $1.60
Excelsior Stretcher and Tack Hammer Combined, ℔ doz. $6.00.....20%

Stuffers, Sausage—

Enterprise Mfg. Co.....25@25&7½%
National Specialty Co., list Jan. 1, 1902.....30&5%

Sweepers, Carpet—

National Sweeper Co.: ℔ doz.
Auditorium, Roller Bearing (26 in. case), Nickel.....$54.00
Mammoth, Roller Bearing (30 in. case), Nickel.....$60.00
Marion, Roller Bearing, regular finishes, full Nickel.....$24.00
Marion Queen, Roller Bearing, full Nickel.....$24.00
Monarch, Roller Bearing, N'kel.$22.00
Monarch, Roller B'r'g, Jap'ned.$20.00
Transparent, Roller Bearing, Plate Glass Top, Nickel.....$36.00
Monarch Extra, Roller Bearing, (17-in. case), Nickel.....$30.00
Monarch Extra, Roller Bearing (17-in. case), Japanned.....$33.00
National Queen, Fancy Veneers.$27.00
Perpetual, Regular B'r'gs, Nkl..$20.00
Perpetual, Regular B'r'gs, Jap.$18.00
Triple Medal.....$24.00
NOTE.—Rebates: 50c per dozen on three-dozen lots; $1 per dozen on five-dozen lots; $2 per dozen on ten-dozen lots; $2.50 per dozen on twenty-five-dozen lots.

Tacks, Finishing Nails, &c.

New List, May 1, 1905.

American Carpet Tacks.90&37½%
American Cut Tacks....90&37½%
Swedes Cut Tacks.....90&37½%
Swedes Upholsterers' Tacks... 90&50%
Gimp Tacks.....90&50%
Lace Tacks.....90&50%
Trimmers' Tacks.....90&37½%
Looking Glass Tacks.....65%
Bill Posters' and Railroad Tacks, 90&50%
Hungarian Nails.....85%
Finishing Nails.....70%
Trunk and Clout Nails....80&5%
NOTE.—The above prices are for Standard Weights. An extra 5% is given on Medium Weights, and an extra 10&5% is given on light weights.

Miscellaneous—

Double Pointed Tacks..... 90&6 or 7 tens
Steel Wire Brads, R. & E. Mfg. Co.'s list.....50&10@60%
See also Nails, Wire.

Tanks, Oil—

	Each.
Emerald, S., S. & Co.	30-gal. $3.40
Emerald, S., S. & Co.	40-gal. $4.25
Queen City, S., S. & Co.	30-gal. $3.65
Queen City, S., S. & Co.	40-gal. $4.50

Tapes, Measuring—

American Asses' Skin.... 50&5@50&10&5%
Patent Leather.....25@30&5%
Steel.....40@40&10%
Chesterman's.....25@25&5%
Eddy Asses' Skin.....40&10@50%
Eddy Patent Leather.....25@30&5%
Eddy Steel.....40@40&10%
Keuffel & Esser Co.:
Favorite, Ass Skin.....40&10@50%
Favorite, Duck and Leather..... 25&5@25&10%
Metallic and Steel, lower list..... 35@35&5%
Pocket.....35@35&5%
Lufkin's:
Asses' Skin.....40&10@50%
Metallic.....30@30&5%
Patent Bend, Leather....25&5@25&10%
Pocket.....40@40&5%
Steel.....33⅓@35%

Teeth, Harrow—

Steel Harrow Teeth, plain or headed, ⅝-inch and larger... per 100 lbs. $3.00

Thermometers—

Tin Case.....80&10@80&10&5%

Ties, Dale—Steel Wire—

Single Loop.....80&2½%
Monitor, Cross Head, &c....70%

Brick Ties—

Niagara Brick Ties.....25&10%

Tinners' Shears, &c.—

See *Shears, Tinners', &c.*

Tinware—

Stamped, Japanned and Pieced, sold very generally at net prices.

Tips, Safety Pole—

Covert's Saddlery Works.....60&10%

Tire Benders, Upsetters, &c.

See *Benders and Upsetters, Tire.*

Tools—Coopers'—

L. & I. J. White.....20@20&5%

Hay—

Myers' Hay Tools.....50%
Stowell's Hay Carriers.....50%
Stowell's Hay Forks.....50%
Stowell's Fork Pulleys.....50%

Saw—

Atkins' Cross Cut Saw Tools.....40%
Simonds' Improved.....33⅓%
Simonds' Crescent.....25%

Ship—

L. & I. J. White.....25%

Transom Lifters—

See *Lifters, Transom.*

Traps—Fly—

Balloon, Globe or Acme, doz. $1.15@$1.25; gro.....$11.50@12.00
Harper, Champion or Paragon, doz. $1.25@1.40; gro. $13.00@13.50

Game—

Oneida Pattern...75&10@75&10&5%
Newhouse.....45@45&5%
Hawley & Norton.....65%
Victor and Oneida.....70&10@70&10&5%
O. C. Jump (Blake Pat.)..60&5@60&10%

Mouse and Rat—

Mouse, Wood, Choker, doz. holes 8½@9¢
Mouse, Round or Square Wire, doz. 85@90¢
Marty French Rat and Mouse Traps (Genuine):
No. 1, Rat, each $1.21; ℔ doz. $13.25
No. 3, Rat, ℔ doz. $6.50; case of 50 $5.75 doz.
No. 3½, Rat, ℔ doz. $5.25; case of 72 gro. $4.70 doz.
No. 4, Mouse, ℔ doz. $3.85; case of 150 $3.00 doz.
No. 5, Mouse, ℔ doz. $3.00; case of 150 $2.25 doz.

Trimmers, Spoke—

Wood's E 1.....50%

Trowels—

Disston Brick and Pointing.....30%
Disston Plastering.....25%
Disston "Standard Brand" and Garden Trowels.....35%
Kohler's Steel Garden Trowels, 5 in. ℔ gro. $4.80
Kohler's Steel Garden Trowels, 6 in. ℔ gro. $6.00
Never-Break Steel Garden Trowels. ℔ gro. $6.00
Rose Brick and Plastering.....25&5%
Woodrough & McParlin, Plastering.25%

Trucks, Warehouse, &c.—

B. & L. Block Co.:
New York Pattern.....50&10%
Western Pattern.....60&10%
Handy Trucks.....℔ doz. $16.00
Grocery.....℔ doz. $15.00
Daisy Stove Trucks, Improved Pattern.....℔ doz. $18.50
McKinney Truck.....each $10.00
Model Stove Trucks.....℔ doz. $18.50

Tubs, Wash—

No.	*1*	*2*	*3*
Galvanized, per doz.	*$4.25*	*4.75*	*5.25*

Galvanized Wash Tubs (S., S. & Co.):

No.	1	2	3	10	20	30
Per doz., net.	$5.70	6.30	7.20	6.60	7.20	8.10

Twine, Miscellaneous—

Flax Twine:	*BC.*	*B.*
No. 9, ¼ and ½-lb. Balls	*22@24¢*	
No. 12, ¼ and ½-lb. Balls	*18@20¢*	
No. 18, ¼ and ½-lb. Balls	*16@18¢*	
No. 24, ¼ and ½-lb. Balls	*16@18¢*	
No. 36, ¼ and ½-lb. Balls	*15@17¢*	
Chalk Line, Cotton ½-lb. Balls	*30¢*	
Cotton Mops, 6, 9, 12 and 15 lb. to doz.	*9½@11¢*	
Cotton Wrapping, 5 Balls to lb., according to quality...	*13½@20¢*	
American 2-Ply Hemp, ¼ and ½-lb. Balls	*13@14½¢*	
American 3-Ply Hemp, 1-lb. Balls	*13@14½¢*	
India 2-Ply Hemp, ¼ and ½-lb. Balls (Spring Twine)	*31½¢*	
India 3-Ply Hemp, 1-lb. Balls	*31½¢*	
India 3-Ply Hemp, 1½-lb. Balls.	*7@8¢*	
2, 3, 4 and 5-Ply Jute, ½-lb. Balls	*9@10¢*	
Mason Line, Linen, ½-lb. Bls.	*46¢*	
No. 26½ Mattress, ¼ and ½-lb. Balls	*37¢*	
Wool, 3 to 6 ply....	*B 4¾¢;*	*A 5¢*

Vises—

Solid Box.....60&10@60&10&10%

Parallel—

Athol Machine Co.:
Simpson's Adjustable.....40%
Standard.....40%
Amateur.....25%
Columbian Hdw. Co.....40%
Emmert Universal:
Pattern Makers' No. 1, $15.00; No. 2, $12.50; No. 3, $10.00.
Machinist and Tool Makers' No. 4, $12.50; No. 5, $7.00; No. 6, $10.00; No. 10, $21.50.
Jewelers' No. 7.....$4.00
Fisher & Norris Double Screw..15&10%
Hollands':
Machinists'.....40@40&5%
Keystone.....65&5@70%
Lewis Tool Co.....20@30%
Merrill's.....20%
Millers Falls.....60&10%
Massey Vise Co.:
Clincher.....40%
Perfect.....20%
Lightning Grip.....20%
Parker's:
Victor.....20@25%
Regulars.....20@25%
Vulcan's.....40@45%
Combination Pipe.....55@60%
Prentiss.....20@25%
Sargent's.....40%
Smith & Hemenway Co.:
Machinists'.....40%
Jewelers'.....33⅓%
Snediker's X. L.....33⅓%
Stephens'.....33⅓%
Williamson Mfg. Co. Double Swivel.40%

Saw Filers—

Disston's D 3 Clamp and Guide, ℔ doz. $30.....25%
Perfection Saw Clamps, ℔ doz.....$5.00
Reading.....60%
Wentworth's Rubber Jaw, Nos. 1, 2 and 3.....45&50%

Wood Workers—

Massey Vise Co.:
Lightning Grip.....15%
Perfect.....15%
Wyman & Gordon's Quick Action, 6 in., $6.00; 9 in., $7.00; 14 in., $8.00.

Miscellaneous—

Bignall & Keeler Combination Pipe Vise.....60&10%
Holland's Combination Pipe..60@60&5%
Massey's Quick Action Pipe.....40%
Parker's Combination Pipe:
87 Series.....60%
187 Series.....60&5%
No. 870.....40%
Williamson Mfg. Co. Double Swivel Combination Pipe.....40%

Wads—*Price per M.*

B. E., 11 up	*60¢*	*Dis. 15%*
B. E., 9 and 10	*70¢*	
B. E., 8	*80¢*	
B. E., 7	*80¢*	
P. E., 11 up	*$1.00*	
P. E., 9 and 10	*1.25*	
P. E., 8	*1.50*	
P. E., 7	*1.50*	
Ely's B. E., 11 and larger.	*$1.70@1.75*	
Ely's P. E., 12 to 20	*$3.00@3.25*	

Ware, Hollow—Cast Iron, Hollow—

Stove Hollow Ware:
Enameled.....50@55&10%
Ground.....55@60&10%
Plain or Unground..60@65&10%
Country Hollow Ware, per 100 lbs.....$2.75@3.00
White Enameled Ware:
Maslin Kettles.....70%
Covered Wares
Tinned and Turned.....40%
Enameled.....50%
See also *Pots, Glue.*

Enameled—

Agate Nickel Steel Ware.....50&20%
Agate Nickel Steel Ware, Specials..... 60&15%
Iron Clad Ware.....70&10%
Lava, Enameled.....40&10%
Never Break Enameled.....50%

Tea Kettles—

Galvanized Tea Kettles:

Inch	*6*	*7*	*8*	*9*
Each	*45¢*	*50¢*	*55¢*	*65¢*

Steel Hollow Ware—

Avery Spiders and Griddles..65@65&5%
Avery Kettles.....60%
Porcelained.....50&5@50&10%
Never Break Spiders and Griddles..... 65&5%
Never Break Kettles.....60%
Solid Steel Spiders and Griddles.65&5%
Solid Steel Kettles.....60%

Warmers, Foot—

Pike Mfg. Co., Soapstone....40@40&10%

Washboards—

Solid Zinc: ℔ doz.
Crescent, family size, bent frame.$3.25
Red Star, family size, stationary protector.....$3.25
Double Zinc Surface:
Saginaw Globe, family size, stationary protector.....$2.90
Cable Cross, family size, stationary protector.....$3.15
Single Zinc Surface:
Naiad, family size, open back, perforated.....$2.65
Saginaw Globe, protector, family size, ventilated back.....$2.50
Brass Surface:
Brass King, Single Surface, open back.....$3.25
Nickel Plate Surface:
No. 1001 Nickel Plate, Single Surface.....$3.25
Glass Surface:
Glass King, Single Surface, open back.....$3.25
Enamel Surface:
Enamel King, Single Surface, ventilated back.....$3.25

Washers—Leather, Axle—

Solid.....80&10@80&10&10%
Patent.....90@90&5%
Coil: ⅞ 1 1⅛ 1¼ inch.
10¢ 11¢ 12¢ 13¢ per box

Iron or Steel—

Size bolt.... 5-16 ⅜ ½ ⅝ ¾
Washers ...$5.20 4.30 3.00 2.80 2.60
In lots less than one keg add ½¢ per lb.; 5-lb. boxes add ½¢ to list.

Cast Washers—

Over ½ inch, barrel lots..... per lb. 1¾@2¢

Weather Strip—Flexible Felt—

Lined, per 100 ft., $2; $3; $4.....40&10%
Moore's Unlined, per 100 ft., $2; $3; $4.....50&10%

Wedges—

Oil Finish.....lb 2.15@2.30¢

Weights—Hitching—

Covert Mfg. Co.....40&2%
Covert's Saddlery Works.....60&10%

Sash—

Per ton, f.o.b. factory:
Eastern District....$22.50@24.00
Southern Territory..$18.00@19.00
Western and Central Districts.....$18.50@19.50

Wheels, Well—

8-in., $1.50@1.55; 10-in., $1.65@1.70; 12-in., $2.25@2.35; 14-in., $3.40@3.50.

Wire and Wire Goods—

Bright and Annealed:
6 to 9.....80&5@80&7½%
10 to 18.....80@80&5%
19 to 26.....80&10@80&10&5%
27 to 36.....80&5@80&10%
Galvanized:
6 to 9.....77½@77½&5%
10 to 14.....72½@72½&5%
15 to 16.....75&7½@75&10&2½%
19 to 26.....75&5@75&10%
27 to 36.....72½&5@72&7½%
Coppered:
6 to 9.....77½@77½&5%
10 to 14.....77½@77½&7½%
15 to 18.....75&10@75&10&2½%
19 to 26.....75&10&5@80%
27 to 36.....75@75&5%
Tinned:
6 to 14.....77½@77½&7½%
15 to 18.....75&5@75&10%
Annealed, Steel and Tinned, on Spools ..70&10&10@70&10&10&10%
Brass and Copper on Spools... 60&10@60&10&10%
Brass, list Feb. 26, '96.....30&5%
Copper, list Feb. 26, '96.....15%
Cast Steel Wire.....50%
Wire Clothes Line, see Lines.
Wire Picture Cord, see Cord.

Bright Wire Goods—

List June 24, 1903..90&25@90&10%

Wire Cloth and Netting—

Galvanized Wire Netting..... 80&15@80&17½%
Painted Screen Cloth, 100 ft., $1.20
Standard Galv. Hardware Grade:
Nos. 2, 2½ & 3 Mesh, sq. ft. 3 ¢
Nos. 4 and 5 Mesh, sq. ft. 3½¢
No. 6 Mesh, sq. ft.....3½¢
No. 8 Mesh, sq. ft.....4 ¢

Wire, Barb—See *Trade Report*

Wrenches—

Agricultural....75&10@75&10&10%
Alligator or Crocodile..70&10@75%
Baxter Pattern S Wrenches... 70&5@70&10%
Drop Forged S.....45@45&5%
Acme.....60&10%
Alligator Pattern.....70%
Bull Dog.....70%
Bemis & Call's:
Adjustable S.....40%
Adjustable S Pipe.....40%
Bemis Pipe.....60%
Briggs Pattern.....40%
Combination Black.....40&5%
Combination Bright.....40%
Merrick Pattern.....50%
Boardman's.....33⅓%
Coes' Genuine Knife Hdl..40&10&5&5%
Coes' Genuine Steel Hdl..40&10&5&5%
Coes' Genuine Key Model..40&10&5&5%
Coes' "Mechanics"....40&10&10&5&5%
Donohue's Engineer.....40&10%
Eagle.....50&10%
Elgin Wrenches, ℔ doz.....$6.25
Elgin Rethreading Attachment, ℔ doz.....$6.25
Elgin Extra Dies and Jaws.....50%
Gem Pocket.....30%
Hercules.....70%
W. & B. Machinist:
Case lots.....50&5%
Less than case lots.....50%
Improved Pipe (W. & B.).....60%
Solid Handles, P., S. & W..50@50&5%
Stillson.....65%
Vulcan Chain.....50%

Fruit Jar—

Triumph Fruit Jar Wrench, 5 gross lots, ℔ gross, $7.50; ℔ doz.....$0.80

Wringers—

Tuttle Roller Press Mop Pail Wringer, each, $8.00; ℔ doz.....$48.00

Wrought Goods—

Staples, Hooks, &c., list March 17, '92.....90@90&10%

Yokes, Neck—

Covert Saddlery Works, Trimmed..70%
Covert Saddlery Works, Neck Yoke Centers.....70%

Yokes, Ox, and Ox Bows—

Fort Madison's Farmers' & Freighters'.....list net

Zinc—

Sheet.....per 100 lbs., $7.25@7.50

CURRENT METAL PRICES.

JULY 5, 1905.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report.

IRON AND STEEL—

Bar Iron from store—

Refined Iron:	
1 to 1¾ in. round and square	₩ lb 2.00¢
1½ to 4 in. x ⅜ to 1 in.	₩ lb 2.00¢
1½ to 4 in. x ¼ to 5-16	₩ lb 2.20¢
Rods—⅜ and 11-16 round and square	₩ lb 2.20¢
Angles:	Cts ₩ lb
3 in. x ¼ in. and larger	2.25¢
3 in. x 5-16 in. and ⅛ in.	2.45¢
1½ to 2½ in. x ¼ in.	2.25¢
1½ to 2¾ in. x 3-16 in. and thicker	2.20¢
1 to 1¼ in. x 3-16 in.	2.25¢
1 to 1¼ x ⅛ in.	2.30¢
⅞ x ⅛ in.	2.45¢
¾ x ⅛ in.	2.55¢
⅝ x ⅛ in.	3.60¢
½ x 8-32 in.	4.10¢
Tees:	
1 in.	2.55¢
1¼ in.	2.35¢
1½ to 2½ in.	2.25¢
3 in. and larger	2.40¢
Beams	2.20¢
Channels, 3 in. and larger	2.20¢
Bands—1½ to 6 x 3-16 to No. 8	2.30¢
"Burden's Best" Iron, base price	3.05¢
Burden's "H. B. & S." Iron, base price	2.85¢
"Ulster"	3.10¢
Norway Bars	3.30¢
Norway Shapes	3.80¢

Merchant Steel from Store—

	per lb
Bessemer Machinery	1.95¢
Toe Calk, Tire and Sleigh Shoe	2.50@3.00¢
Best Cast Steel, base price in small lots	7¢

Sheet Iron from Store—

Black.

	One Pass, C.R. Soft Steel.	R. G. Cleaned.
No. 14	₩ lb 2.60	2.70¢
Nos. 18 to 21	₩ lb 2.75	2.90¢
No. 27	₩ lb 2.90	3.20¢
No. 28	₩ lb 3.00	3.20¢

Russia, Planished, &c.

Genuine Russia, according to assortment	₩ lb 11¾@14¢
Patent Planished	₩ lb A, 10¢; B, 9¢, net.

Galvanized.

Nos. 14 to 16	₩ lb, 3.05¢
Nos. 22 to 24	₩ lb, 3.45¢
No. 27	₩ lb, 3.90¢
No. 28	₩ lb, 4.15¢

No. 20 and lighter 36 inches wide, 25¢ higher.

METALS—

Tin—

Straits Pig	₩ lb 32 @32¼¢

Tin Plates—

American Charcoal Plates (per box.)

A.A.A. Charcoal:	
IC, 14 x 20	5.95
IX, 14 x 20	7.30
A. Charcoal:	
IC, 14 x 20	5.20
IX, 14 x 20	6.30

American Coke Plates—Bessemer-

IC, 14 x 20.....108 lb	$4.30
IX, 14 x 20	5.30

American Terne Plates—

IC, 20 x 28	$8.50
IX, 20 x 28	10.50

Copper—

Lake Ingot	₩ lb 15¼@16 ¢
Casting	₩ lb 15¼@15¾¢
Sheet Copper Hot Rolled, 16 oz	₩ lb 19¢
" " " 14 "	" " 20¢

Sheet Copper Cold Rolled, 1¢ ₩ lb advance over Hot Rolled.
Sheet Copper Polished 20 in. wide and under, 1¢ advance over Cold Rolled.
Sheet Copper Polished over 20 in. wide, 2¢ advance over Cold Rolled.

Bottoms, Pits and Flats	₩ lb 23¢ basis
Planished Copper, 1¢ ₩ lb more than Polished.	

Seamless Brass Tubes—

Stubs' W. G.	Outside Diameter. ¼	5-16	⅜	7-16	½	Net. 9-16	⅝	¾	⅞	1	Base Price 20¢ 1¼	1½
4-11	..	....	..	....	..	...	..	..	..	..	20	20
12	..	....	..	....	..	...	26	26	25	25	20	20
13	..	....	..	....	..	...	27	27	25	25	20	20
14	..	....	..	....	27	27	27	25	25	25	21	21
15	..	....	..	28	27	27	27	25	25	25	21	21
16	..	....	28	28	27	27	27	25	25	25	22	22
17	..	31	28	28	27	27	27	25	25	25	23	23
18	51	33	29	29	28	28	28	26	26	26	24	24
19	60	33	29	29	28	28	28	26	26	26	25	25
20	62	38	29	29	28	28	28	26	26	26	26	26
21	64	49	31	30	30	28	27	27	27	27	27	27
22	69	51	33	33	31	31	29	28	28	28	28	28
23	74	59	35	35	33	33	31	31	31	31	31	31
24	79	64	51	46	44	43	42	41	39	38	38	39
25	84	69	54	49	47	45	44	43	42	42	45	44

Iron Pipe Sizes—Brass

⅛	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4	4½	5	6 inch
28	27	22	21	20	20	20	20	20	20	20	21	22	24	26	27¢ ₩ lb

Brazed Brass Tubing.

Discount from List June 6, 1898, 33⅓%.
Bronze and Copper Tubing advance on Brass List 3¢

Roll and Sheet Brass—

Discount from List June 6, 1898, 30%.

Spelter—

Western	₩ lb 5.90@ ¢

Zinc.

No. 9, base, casks, ₩ lb 7.75¢ | Open	₩ lb 8.25¢

Lead.

American Pig	₩ lb 4.80@5¢
Bar	₩ lb 5.80@6¢

Old Lead in exchange, 4¢ ₩ lb

Solder.

½ & ½, guaranteed	₩ lb 19½@20¼¢
No. 1	₩ lb 17½@18¼¢
Refined	16½@17

Prices of Solder indicated by private brand vary according to composition.

Antimony—

Cookson	₩ lb 12½¢
U. S.	12½¢
Hungarian and Japanese	12 ¢

Aluminum—

No. 1 Aluminum (guaranteed over 99% pure), in ingot for remelting:

Small lots	₩ lb 37¢
100-lb lots	₩ lb 35¢

Old Metals.

Dealers' Purchasing Prices Paid in New York.

Heavy Copper	₩ lb 12¾ ¢
Light and Tinned Copper	₩ lb 11¾ ¢
Heavy Brass	₩ lb 8 ¢
Light Brass	₩ lb 6½ ¢
Lead	₩ lb 4 ¢
Tea Lead	₩ lb 3.75 ¢
Zinc	₩ lb 3.90 ¢
No. 1 Pewter	₩ lb 21 ¢
No. 2 Pewter	₩ lb 8 ¢
Pure Aluminum, Sheet	₩ lb 21 ¢
Tin Plate Scrap	₩ ton 3.....@ 5.00
Wrought Scrap Iron	₩ gross ton $15.00@15.50
Heavy Cast Scrap	₩ gross ton $12.00@13.00
Stove Plate Scrap	₩ gross ton $10.50@11.00

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